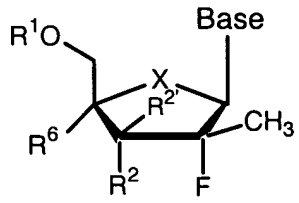
WE CLAIM:

1. A (2'*R*)-2'-deoxy-2'-fluoro-2'-*C*-methyl nucleoside (β-D or β-L) of the formula:



wherein

Base is a purine or pyrimidine base;

X is O, S, CH_2, Se, NH, N-alkyl, CHW (*R*, *S*, or racemic), $C(W)_2$, wherein W is F, Cl, Br, or I;

R^1 and R^7 are independently H, phosphate, including monophosphate, diphosphate, triphosphate, or a stabilized phosphate prodrug, H-phosphonate, including stabilized H-phosphonates, acyl, including optionally substituted phenyl and lower acyl, alkyl, including lower alkyl, O-substituted carboxyalkylamino or its peptide derivatives, sulfonate ester, including alkyl or arylalkyl sulfonyl, including methanesulfonyl and benzyl, wherein the phenyl group is optionally substituted, a lipid, including a phospholipid, an L or D-amino acid (or racemic mixture), a carbohydrate, a peptide, a cholesterol, or other pharmaceutically acceptable leaving group which when administered *in vivo* is capable of providing a compound wherein R^1 is H or phosphate; R^2 is H or phosphate; R^1 and R^2 or R^7 can also be linked with cyclic phosphate group;

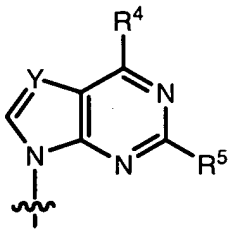
R^2 and $R^{2'}$ are independently H, C_{1-4} alkyl, C_{1-4} alkenyl, C_{1-4} alkynyl, vinyl, N_3, CN, Cl, Br, F, I, NO_2, $C(O)O(C_{1-4}$ alkyl), $C(O)O(C_{1-4}$ alkyl), $C(O)O(C_{1-4}$ alkynyl), $C(O)O(C_{1-4}$ alkenyl), $O(C_{1-4}$ acyl), $O(C_{1-4}$ alkyl), $O(C_{1-4}$ alkenyl), $S(C_{1-4}$ acyl), $S(C_{1-4}$ alkyl), $S(C_{1-4}$ alkynyl), $S(C_{1-4}$ alkenyl), $SO(C_{1-4}$ acyl), $SO(C_{1-4}$ alkyl), $SO(C_{1-4}$ alkynyl), $SO(C_{1-4}$ alkenyl),

$SO_2(C_{1-4}$ acyl), $SO_2(C_{1-4}$ alkyl), $SO_2(C_{1-4}$ alkynyl), $SO_2(C_{1-4}$ alkenyl), $O_3S(C_{1-4}$ acyl), $O_3S(C_{1-4}$ alkyl), $O_3S(C_{1-4}$ alkenyl), NH_2, $NH(C_{1-4}$ alkyl), $NH(C_{1-4}$ alkenyl), $NH(C_{1-4}$ alkynyl), $NH(C_{1-4}$ acyl), $N(C_{1-4}$ alkyl)$_2$, $N(C_{1-18}$ acyl)$_2$, wherein alkyl, alkynyl, alkenyl and vinyl are optinally substituted by N_3, CN, one to three halogen (Cl, Br, F, I), NO_2, $C(O)O(C_{1-4}$ alkyl), $C(O)O(C_{1-4}$ alkyl), $C(O)O(C_{1-4}$ alkynyl), $C(O)O(C_{1-4}$ alkenyl), $O(C_{1-4}$ acyl), $O(C_{1-4}$ alkyl), $O(C_{1-4}$ alkenyl), $S(C_{1-4}$ acyl), $S(C_{1-4}$ alkyl), $S(C_{1-4}$ alkynyl), $S(C_{1-4}$ alkenyl), $SO(C_{1-4}$ acyl), $SO(C_{1-4}$ alkyl), $SO(C_{1-4}$ alkynyl), $SO(C_{1-4}$ alkenyl), $SO_2(C_{1-4}$ acyl), $SO_2(C_{1-4}$ alkyl), $SO_2(C_{1-4}$ alkynyl), $SO_2(C_{1-4}$ alkenyl), $O_3S(C_{1-4}$ acyl), $O_3S(C_{1-4}$ alkyl), $O_3S(C_{1-4}$ alkenyl), NH_2, $NH(C_{1-4}$ alkyl), $NH(C_{1-4}$ alkenyl), $NH(C_{1-4}$ alkynyl), $NH(C_{1-4}$ acyl), $N(C_{1-4}$ alkyl)$_2$, $N(C_{1-4}$ acyl)$_2$, OR^7; R^2 and $R^{2'}$ can be linked together to form a vinyl optionally substituted by one or two of N_3, CN, Cl, Br, F, I, NO_2; and

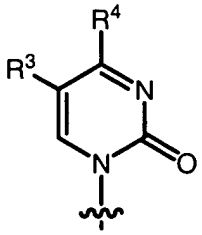
R^6 is an optionally substituted alkyl (including lower alkyl), cyano (CN), CH_3, OCH_3, OCH_2CH_3, hydroxy methyl (CH_2OH), fluoromethyl (CH_2F), azido (N_3), CHCN, CH_2N_3, CH_2NH_2, CH_2NHCH_3, $CH_2N(CH_3)_2$, alkyne (optionally substituted), or fluoro;

or its pharmaceutically acceptable salt or prodrug thereof.

2. The (2'*R*)-2'-deoxy-2'-fluoro-2'-*C*-methyl nucleoside (β-D or β-L) of claim 1 or its pharmaceutically acceptable salt or prodrug thereof, wherein Base is selected from the group consisting of:



(a)



(b)

wherein

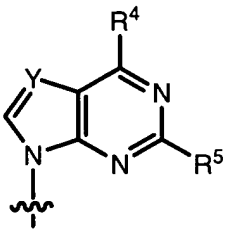
Y is N or CH.

R^3, R^4 and R^5 are independently H, halogen including F, Cl, Br, I, OH, OR', SH, SR', NH_2, NHR', NR'$_2$, lower alkyl of C_1-C_6, halogenated (F, Cl, Br, I) lower alkyl of C_1-C_6 such as CF_3 and CH_2CH_2F, lower alkenyl of C_2-C_6 such as $CH=CH_2$, halogenated (F, Cl, Br, I) lower alkenyl of C_2-C_6 such as CH=CHCl, CH=CHBr and CH=CHI, lower alkynyl of C_2-C_6 such as C≡CH, halogenated (F, Cl, Br, I) lower alkynyl of C_2-C_6, lower alkoxy of C_1-C_6 such as CH_2OH and CH_2CH_2OH, halogenated (F, Cl, Br, I) lower alkoxy of C_1-C_6, CO_2H, CO_2R', $CONH_2$, CONHR', CONR'$_2$, $CH=CHCO_2H$, $CH=CHCO_2R'$; and,

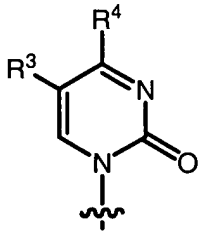
R' is an optionally substituted alkyl of C_1-C_{12} (particularly when the alkyl is an amino acid residue), cycloalkyl, optionally substituted alkynyl of C_2-C_6, optionally substituted lower alkenyl of C_2-C_6, or optionally substituted acyl.

3. The (2'*R*)-2'-deoxy-2'-fluoro-2'-*C*-methyl nucleoside (β-D) of claim 1 or its pharmaceutically acceptable salt or prodrug thereof,

wherein Base is selected from the group consisting of (a) or (b):



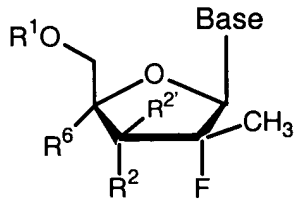
(a)



(b)

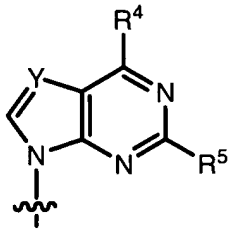
and wherein R^1 is H, R^2 is OH, $R^{2'}$ is H, R^3 is H, and R^4 is NH_2 or OH, and R^5 is NH_2.

4. A (2'*R*)-2'-deoxy-2'-fluoro-2'-*C*-methyl nucleoside (β-D or β-L) of the formula:

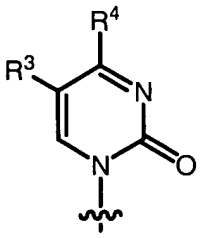


wherein

Base is selected from the group consisting of



(a)



(b)

Y is N or CH;

R^1 and R^7 are independently H, phosphate, including monophosphate, diphosphate, triphosphate, or a stabilized phosphate prodrug, H-phosphonate, including stabilized H-phosphonates, acyl, including optionally substituted phenyl and lower acyl, alkyl, including lower alkyl, O-substituted carboxyalkylamino or its peptide derivatives, sulfonate ester, including alkyl or arylalkyl sulfonyl, including methanesulfonyl and benzyl, wherein the phenyl group is optionally substituted, a lipid, including a phospholipid, an L or D-amino acid (or racemic mixture), a carbohydrate, a peptide, a cholesterol, or other pharmaceutically acceptable leaving group which when administered *in vivo* is capable of providing a compound wherein R^1 is H or phosphate; R^2 is H or phosphate; R^1 and R^2 or R^7 can also be linked with cyclic phosphate group;

R^2 and $R^{2'}$ are independently H, C_{1-4} alkyl, C_{1-4} alkenyl, C_{1-4} alkynyl, vinyl, N_3, CN, Cl, Br, F, I, NO_2, $C(O)O(C_{1-4}$ alkyl), $C(O)O(C_{1-4}$ alkyl), $C(O)O(C_{1-4}$ alkynyl), $C(O)O(C_{1-4}$ alkenyl), $O(C_{1-4}$ acyl), $O(C_{1-4}$ alkyl), $O(C_{1-4}$ alkenyl), $S(C_{1-4}$ acyl), $S(C_{1-4}$ alkyl), $S(C_{1-4}$ alkynyl), $S(C_{1-4}$ alkenyl), $SO(C_{1-4}$ acyl), $SO(C_{1-4}$ alkyl), $SO(C_{1-4}$ alkynyl), $SO(C_{1-4}$ alkenyl), $SO_2(C_{1-4}$ acyl), $SO_2(C_{1-4}$ alkyl), $SO_2(C_{1-4}$ alkynyl), $SO_2(C_{1-4}$ alkenyl), $O_3S(C_{1-4}$ acyl), $O_3S(C_{1-4}$ alkyl), $O_3S(C_{1-4}$ alkenyl), NH_2, $NH(C_{1-4}$ alkyl), $NH(C_{1-4}$ alkenyl), $NH(C_{1-4}$ alkynyl), $NH(C_{1-4}$ acyl), $N(C_{1-4}$ alkyl)$_2$, $N(C_{1-18}$ acyl)$_2$, wherein alkyl, alkynyl, alkenyl and vinyl are optinally substituted by N_3, CN, one to three halogen (Cl, Br, F, I), NO_2, $C(O)O(C_{1-4}$ alkyl), $C(O)O(C_{1-4}$ alkyl), $C(O)O(C_{1-4}$ alkynyl), $C(O)O(C_{1-4}$ alkenyl), $O(C_{1-4}$ acyl), $O(C_{1-4}$ alkyl), $O(C_{1-4}$ alkenyl), $S(C_{1-4}$ acyl), $S(C_{1-4}$ alkyl), $S(C_{1-4}$ alkynyl), $S(C_{1-4}$ alkenyl), $SO(C_{1-4}$ acyl), $SO(C_{1-4}$ alkyl), $SO(C_{1-4}$ alkynyl), $SO(C_{1-4}$ alkenyl), $SO_2(C_{1-4}$ acyl), $SO_2(C_{1-4}$ alkyl), $SO_2(C_{1-4}$ alkynyl), $SO_2(C_{1-4}$ alkenyl), $O_3S(C_{1-4}$ acyl), $O_3S(C_{1-4}$ alkyl), $O_3S(C_{1-4}$ alkenyl), NH_2, $NH(C_{1-4}$ alkyl), $NH(C_{1-4}$ alkenyl), $NH(C_{1-4}$ alkynyl), $NH(C_{1-4}$ acyl), $N(C_{1-4}$ alkyl)$_2$, $N(C_{1-4}$ acyl)$_2$, OR^7; R^2 and $R^{2'}$ can be linked together to form a vinyl optionally substituted by one or two of N_3, CN, Cl, Br, F, I, NO_2;

R^3, R^4 and R^5 are independently H, halogen including F, Cl, Br, I, OH, OR', SH, SR', NH_2, NHR', NR'$_2$, lower alkyl of C_1-C_6, halogenated (F, Cl, Br, I) lower alkyl of C_1-C_6 such as CF_3 and CH_2CH_2F, lower alkenyl of C_2-C_6 such as $CH=CH_2$, halogenated (F, Cl, Br, I) lower alkenyl of C_2-C_6 such as CH=CHCl, CH=CHBr and CH=CHI, lower alkynyl of C_2-C_6 such as C≡CH, halogenated (F, Cl, Br, I) lower alkynyl of C_2-C_6, lower alkoxy of C_1-C_6 such as CH_2OH and CH_2CH_2OH, halogenated (F, Cl, Br, I) lower alkoxy of C_1-C_6, CO_2H, CO_2R', $CONH_2$, CONHR', CONR'$_2$, $CH=CHCO_2H$, $CH=CHCO_2R'$;

R' is an optionally substituted alkyl of C_1-C_{12} (particularly when the alkyl is an amino acid residue), cycloalkyl, optionally substituted alkynyl of C_2-

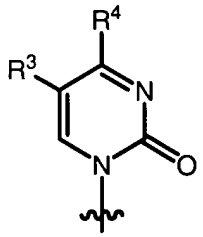
C_6, optionally substituted lower alkenyl of C_2-C_6, or optionally substituted acyl;

R^6 is an optionally substituted alkyl (including lower alkyl), cyano (CN), CH_3, OCH_3, OCH_2CH_3, hydroxy methyl (CH_2OH), fluoromethyl (CH_2F), azido (N_3), CHCN, CH_2N_3, CH_2NH_2, CH_2NHCH_3, $CH_2N(CH_3)_2$, alkyne (optionally substituted), or fluoro;

or its pharmaceutically acceptable salt or prodrug thereof.

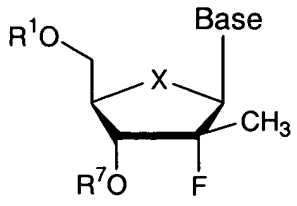
5. The (2'*R*)-2'-deoxy-2'-fluoro-2'-*C*-methyl nucleoside (β-D) of claim 4 or its pharmaceutically acceptable salt or prodrug thereof, wherein

Base is



and R^1 is H, R^2 is OH, $R^{2'}$ is H, R^3 is H, R^4 is NH_2 or OH, and R^6 is H.

6. A (2'*R*)-2'-deoxy-2'-fluoro-2'-*C*-methyl nucleoside (β-D or β-L) or its pharmaceutically acceptable salt or prodrug thereof of the structure:



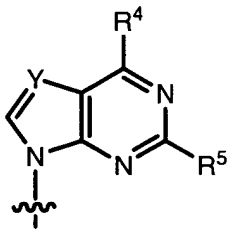
wherein Base is a purine or pyrimidine base;

X is O, S, CH_2, Se, NH, N-alkyl, CHW (*R*, *S*, or racemic), $C(W)_2$, wherein W is F, Cl, Br, or I; and,

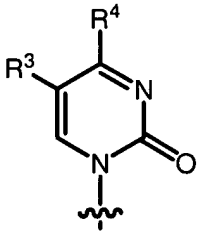
R^1 and R^7 are independently H, phosphate, including monophosphate, diphosphate, triphosphate, or a stabilized phosphate prodrug, H-phosphonate, including stabilized H-phosphonates, acyl, including optionally substituted phenyl and lower acyl, alkyl, including lower alkyl, O-substituted carboxyalkylamino or its peptide derivatives, sulfonate ester, including alkyl or arylalkyl sulfonyl, including methanesulfonyl and benzyl, wherein the phenyl group is optionally substituted, a lipid, including a phospholipid, an L or D-amino acid, a carbohydrate, a peptide, a cholesterol, or other pharmaceutically acceptable leaving group which when administered *in vivo* is capable of providing a compound wherein R^1 or R^7 is independently H or phosphate; R^1 and R^7 can also be linked with cyclic phosphate group.

7. The (2'*R*)-2'-deoxy-2'-fluoro-2'-*C*-methyl nucleoside (β-D or β-L) of claim 6 or its pharmaceutically acceptable salt or prodrug thereof,

wherein Base is selected from the group consisting of:



(a)



(b)

Y is N or CH;

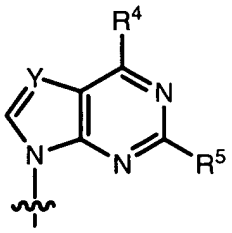
R^3, R^4 and R^5 are independently H, halogen including F, Cl, Br, I, OH, OR', SH, SR', NH_2, NHR', NR'_2, lower alkyl of C_1-C_6, halogenated (F, Cl,

Br, I) lower alkyl of C_1-C_6 such as CF_3 and CH_2CH_2F, lower alkenyl of C_2-C_6 such as $CH=CH_2$, halogenated (F, Cl, Br, I) lower alkenyl of C_2-C_6 such as CH=CHCl, CH=CHBr and CH=CHI, lower alkynyl of C_2-C_6 such as C≡CH, halogenated (F, Cl, Br, I) lower alkynyl of C_2-C_6, lower alkoxy of C_1-C_6 such as CH_2OH and CH_2CH_2OH, halogenated (F, Cl, Br, I) lower alkoxy of C_1-C_6, CO_2H, CO_2R', $CONH_2$, CONHR', CONR'$_2$, $CH=CHCO_2H$, $CH=CHCO_2R'$; and,

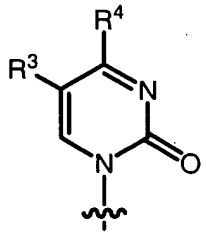
R' is an optionally substituted alkyl of C_1-C_{12} (particularly when the alkyl is an amino acid residue), cycloalkyl, optionally substituted alkynyl of C_2-C_6, optionally substituted lower alkenyl of C_2-C_6, or optionally substituted acyl.

8. The (2'*R*)-2'-deoxy-2'-fluoro-2'-*C*-methyl nucleoside (β-D) of claim 6 or its pharmaceutically acceptable salt or prodrug thereof,

wherein Base is selected from the group consisting of (a) or (b):



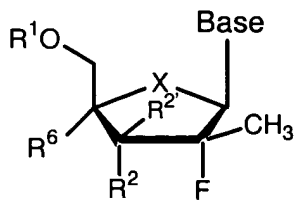
(a)



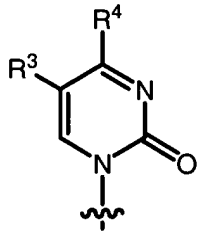
(b)

and wherein R^1 and R^7 are H, R^3 is H, and R^4 is NH_2 or OH, and R^5 is NH_2.

9. A (2'*R*)-2'-deoxy-2'-fluoro-2'-*C*-methyl nucleoside (β-D or β-L) of the formula:



wherein Base is



X is O, S, CH_2, Se, NH, N-alkyl, CHW (*R*, *S*, or racemic), $C(W)_2$, wherein W is F, Cl, Br, or I;

R^1 and R^7 are independently H, phosphate, including monophosphate, diphosphate, triphosphate, or a stabilized phosphate prodrug, H-phosphonate, including stabilized H-phosphonates, acyl, including optionally substituted phenyl and lower acyl, alkyl, including lower alkyl, O-substituted carboxyalkylamino or its peptide derivatives, sulfonate ester, including alkyl or arylalkyl sulfonyl, including methanesulfonyl and benzyl, wherein the phenyl group is optionally substituted, a lipid, including a phospholipid, an L or D-amino acid (or racemic mixture), a carbohydrate, a peptide, a cholesterol, or other pharmaceutically acceptable leaving group which when administered *in vivo* is capable of providing a compound wherein R^1 is H or phosphate; R^2 is H or phosphate; R^1 and R^2 or R^7 can also be linked with cyclic phosphate group;

R^2 and $R^{2'}$ are independently H, C_{1-4} alkyl, C_{1-4} alkenyl, C_{1-4} alkynyl, vinyl, N_3, CN, Cl, Br, F, I, NO_2, $C(O)O(C_{1-4}$ alkyl), $C(O)O(C_{1-4}$ alkyl), $C(O)O(C_{1-4}$ alkynyl), $C(O)O(C_{1-4}$ alkenyl), $O(C_{1-4}$ acyl), $O(C_{1-4}$ alkyl), $O(C_{1-4}$

alkenyl), S(C_{1-4} acyl), S(C_{1-4} alkyl), S(C_{1-4} alkynyl), S(C_{1-4} alkenyl), SO(C_{1-4} acyl), SO(C_{1-4} alkyl), SO(C_{1-4} alkynyl), SO(C_{1-4} alkenyl), SO_2(C_{1-4} acyl), SO_2(C_{1-4} alkyl), SO_2(C_{1-4} alkynyl), SO_2(C_{1-4} alkenyl), O_3S(C_{1-4} acyl), O_3S(C_{1-4} alkyl), O_3S(C_{1-4} alkenyl), NH_2, NH(C_{1-4} alkyl), NH(C_{1-4} alkenyl), NH(C_{1-4} alkynyl), NH(C_{1-4} acyl), N(C_{1-4} alkyl)$_2$, N(C_{1-18} acyl)$_2$, wherein alkyl, alkynyl, alkenyl and vinyl are optinally substituted by N_3, CN, one to three halogen (Cl, Br, F, I), NO_2, C(O)O(C_{1-4} alkyl), C(O)O(C_{1-4} alkyl), C(O)O(C_{1-4} alkynyl), C(O)O(C_{1-4} alkenyl), O(C_{1-4} acyl), O(C_{1-4} alkyl), O(C_{1-4} alkenyl), S(C_{1-4} acyl), S(C_{1-4} alkyl), S(C_{1-4} alkynyl), S(C_{1-4} alkenyl), SO(C_{1-4} acyl), SO(C_{1-4} alkyl), SO(C_{1-4} alkynyl), SO(C_{1-4} alkenyl), SO_2(C_{1-4} acyl), SO_2(C_{1-4} alkyl), SO_2(C_{1-4} alkynyl), SO_2(C_{1-4} alkenyl), O_3S(C_{1-4} acyl), O_3S(C_{1-4} alkyl), O_3S(C_{1-4} alkenyl), NH_2, NH(C_{1-4} alkyl), NH(C_{1-4} alkenyl), NH(C_{1-4} alkynyl), NH(C_{1-4} acyl), N(C_{1-4} alkyl)$_2$, N(C_{1-4} acyl)$_2$, OR^7; R^2 and $R^{2'}$ can be linked together to form a vinyl optionally substituted by one or two of N_3, CN, Cl, Br, F, I, NO_2;

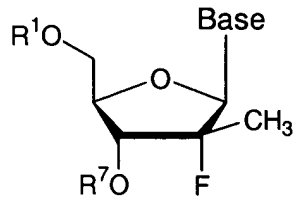
R^3 and R^4 are independently H, halogen including F, Cl, Br, I, OH, OR', SH, SR', NH_2, NHR', NR'$_2$, lower alkyl of C_1-C_6, halogenated (F, Cl, Br, I) lower alkyl of C_1-C_6 such as CF_3 and CH_2CH_2F, lower alkenyl of C_2-C_6 such as $CH=CH_2$, halogenated (F, Cl, Br, I) lower alkenyl of C_2-C_6 such as CH=CHCl, CH=CHBr and CH=CHI, lower alkynyl of C_2-C_6 such as C≡CH, halogenated (F, Cl, Br, I) lower alkynyl of C_2-C_6, lower alkoxy of C_1-C_6 such as CH_2OH and CH_2CH_2OH, halogenated (F, Cl, Br, I) lower alkoxy of C_1-C_6, CO_2H, CO_2R', $CONH_2$, CONHR', CONR'$_2$, $CH=CHCO_2H$, $CH=CHCO_2R'$; and,

R' is an optionally substituted alkyl of C_1-C_{12} (particularly when the alkyl is an amino acid residue), cycloalkyl, optionally substituted alkynyl of C_2-C_6, optionally substituted lower alkenyl of C_2-C_6, or optionally substituted acyl.

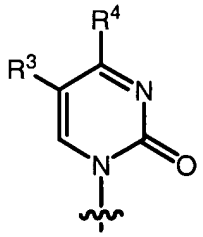
R^6 is an optionally substituted alkyl (including lower alkyl), cyano (CN), CH_3, OCH_3, OCH_2CH_3, hydroxy methyl (CH_2OH), fluoromethyl (CH_2F), azido (N_3), CHCN, CH_2N_3, CH_2NH_2, CH_2NHCH_3, $CH_2N(CH3)_2$, alkyne (optionally substituted), or fluoro;

or its pharmaceutically acceptable salt or prodrug thereof.

10. A (2'*R*)-2'-deoxy-2'-fluoro-2'-*C*-methyl nucleoside (β-D or β-L) of the formula



wherein Base is



R^1 and R^7 are independently H, phosphate, including monophosphate, diphosphate, triphosphate, or a stabilized phosphate prodrug, H-phosphonate, including stabilized H-phosphonates, acyl, including optionally substituted phenyl and lower acyl, alkyl, including lower alkyl, O-substituted carboxyalkylamino or its peptide derivatives, sulfonate ester, including alkyl or arylalkyl sulfonyl, including methanesulfonyl and benzyl, wherein the phenyl group is optionally substituted, a lipid, including a phospholipid, an L or D-amino acid (or racemic mixture), a carbohydrate, a peptide, a cholesterol, or other pharmaceutically acceptable leaving group which when administered *in*

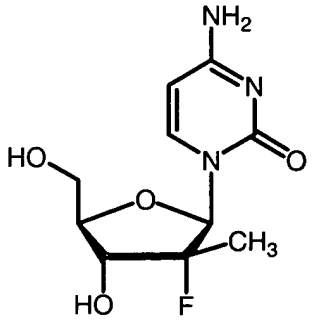
vivo is capable of providing a compound wherein R^1 is H or phosphate; R^2 is H or phosphate; R^1 and R^2 or R^7 can also be linked with cyclic phosphate group;

R^3 and R^4 are independently H, halogen including F, Cl, Br, I, OH, OR', SH, SR', NH_2, NHR', NR'$_2$, lower alkyl of C_1-C_6, halogenated (F, Cl, Br, I) lower alkyl of C_1-C_6 such as CF_3 and CH_2CH_2F, lower alkenyl of C_2-C_6 such as $CH=CH_2$, halogenated (F, Cl, Br, I) lower alkenyl of C_2-C_6 such as CH=CHCl, CH=CHBr and CH=CHI, lower alkynyl of C_2-C_6 such as C≡CH, halogenated (F, Cl, Br, I) lower alkynyl of C_2-C_6, lower alkoxy of C_1-C_6 such as CH_2OH and CH_2CH_2OH, halogenated (F, Cl, Br, I) lower alkoxy of C_1-C_6, CO_2H, CO_2R', $CONH_2$, CONHR', CONR'$_2$, $CH=CHCO_2H$, $CH=CHCO_2R'$;

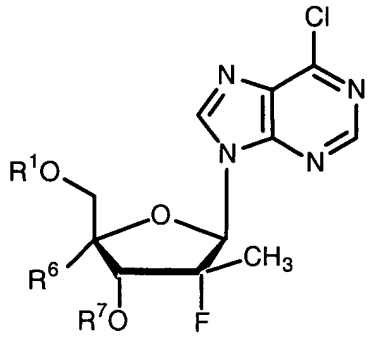
R' is an optionally substituted alkyl of C_1-C_{12} (particularly when the alkyl is an amino acid residue), cycloalkyl, optionally substituted alkynyl of C_2-C_6, optionally substituted lower alkenyl of C_2-C_6, or optionally substituted acyl;

or its pharmaceutically acceptable salt or prodrug thereof.

11. A (2'*R*)-2'-deoxy-2'-fluoro-2'-*C*-methyl nucleoside (β-D) or its pharmaceutically acceptable salt or prodrug thereof of the formula:



12. A (2'*R*)-2'-deoxy-2'-fluoro-2'-*C*-methyl nucleoside (β-D) or its pharmaceutically acceptable salt or prodrug thereof of the formula:

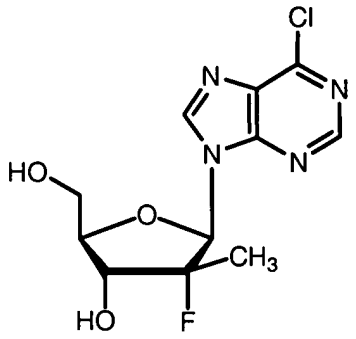


wherein

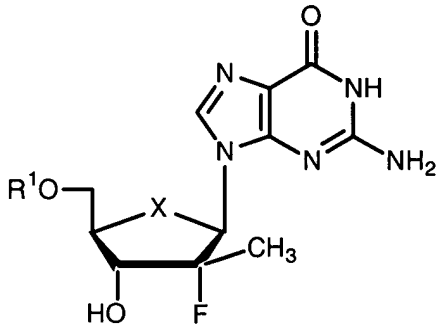
R^1 and R^7 are independently H, phosphate, including monophosphate, diphosphate, triphosphate, or a stabilized phosphate prodrug, H-phosphonate, including stabilized H-phosphonates, acyl, including optionally substituted phenyl and lower acyl, alkyl, including lower alkyl, O-substituted carboxyalkylamino or its peptide derivatives, sulfonate ester, including alkyl or arylalkyl sulfonyl, including methanesulfonyl and benzyl, wherein the phenyl group is optionally substituted, a lipid, including a phospholipid, an L or D-amino acid, a carbohydrate, a peptide, a cholesterol, or other pharmaceutically acceptable leaving group which when administered *in vivo* is capable of providing a compound wherein R^1 or R^7 is independently H or phosphate; R^1 and R^7 can also be linked with cyclic phosphate group; and,

R^6 is an optionally substituted alkyl (including lower alkyl), cyano (CN), CH_3, OCH_3, OCH_2CH_3, hydroxy methyl (CH_2OH), fluoromethyl (CH_2F), azido (N_3), CHCN, CH_2N_3, CH_2NH_2, CH_2NHCH_3, $CH_2N(CH3)_2$, alkyne (optionally substituted), or fluoro.

13. A (2'*R*)-2'-deoxy-2'-fluoro-2'-*C*-methyl nucleoside (β-D) or its pharmaceutically acceptable salt or prodrug thereof of the formula:



14. A (2'*R*)-2'-deoxy-2'-fluoro-2'-*C*-methyl nucleoside (β-D) or its pharmaceutically acceptable salt or prodrug thereof of the formula:



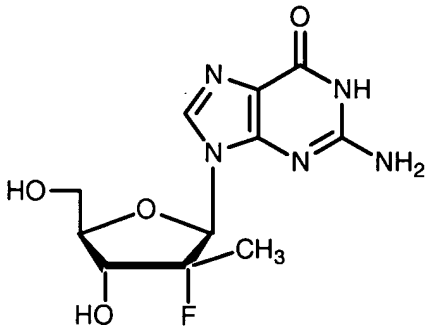
wherein

X is O, S, CH_2, Se, NH, N-alkyl, CHW (*R*, *S*, or racemic), $C(W)_2$, wherein W is F, Cl, Br, or I; and

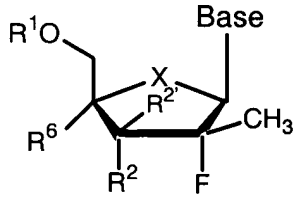
R^1 is H, phosphate, including monophosphate, diphosphate, triphosphate, or a stabilized phosphate prodrug, H-phosphonate, including stabilized H-phosphonates, acyl, including optionally substituted phenyl and lower acyl, alkyl, including lower alkyl, O-substituted carboxyalkylamino or its peptide derivatives, sulfonate ester, including alkyl or arylalkyl sulfonyl, including methanesulfonyl and benzyl, wherein the phenyl group is optionally substituted, a lipid, including a phospholipid, an L or D-amino acid, a carbohydrate, a peptide, a cholesterol, or other

pharmaceutically acceptable leaving group which when administered *in vivo* is capable of providing a compound wherein R^1 is H or phosphate.

15. A (2'*R*)-2'-deoxy-2'-fluoro-2'-*C*-methyl nucleoside (β-D) or its pharmaceutically acceptable salt or prodrug thereof of the formula:



16. A pharmaceutical composition comprising a (2'*R*)-2'-deoxy-2'-fluoro-2'-*C*-methyl nucleoside (β-D or β-L) of the formula:



wherein

Base is a purine or pyrimidine base;

X is O, S, CH_2, Se, NH, N-alkyl, CHW (*R*, *S*, or racemic), $C(W)_2$, wherein W is F, Cl, Br, or I;

R^1 and R^7 are independently H, phosphate, including monophosphate, diphosphate, triphosphate, or a stabilized phosphate prodrug, H-phosphonate, including stabilized H-phosphonates, acyl, including optionally substituted phenyl and lower acyl, alkyl, including lower alkyl, O-substituted carboxyalkylamino or its peptide derivatives,

sulfonate ester, including alkyl or arylalkyl sulfonyl, including methanesulfonyl and benzyl, wherein the phenyl group is optionally substituted, a lipid, including a phospholipid, an L or D-amino acid (or racemic mixture), a carbohydrate, a peptide, a cholesterol, or other pharmaceutically acceptable leaving group which when administered *in vivo* is capable of providing a compound wherein R^1 is H or phosphate; R^2 is H or phosphate; R^1 and R^2 or R^7 can also be linked with cyclic phosphate group;

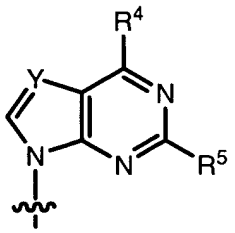
R^2 and $R^{2'}$ are independently H, C_{1-4} alkyl, C_{1-4} alkenyl, C_{1-4} alkynyl, vinyl, N_3, CN, Cl, Br, F, I, NO_2, $C(O)O(C_{1-4}$ alkyl), $C(O)O(C_{1-4}$ alkyl), $C(O)O(C_{1-4}$ alkynyl), $C(O)O(C_{1-4}$ alkenyl), $O(C_{1-4}$ acyl), $O(C_{1-4}$ alkyl), $O(C_{1-4}$ alkenyl), $S(C_{1-4}$ acyl), $S(C_{1-4}$ alkyl), $S(C_{1-4}$ alkynyl), $S(C_{1-4}$ alkenyl), $SO(C_{1-4}$ acyl), $SO(C_{1-4}$ alkyl), $SO(C_{1-4}$ alkynyl), $SO(C_{1-4}$ alkenyl), $SO_2(C_{1-4}$ acyl), $SO_2(C_{1-4}$ alkyl), $SO_2(C_{1-4}$ alkynyl), $SO_2(C_{1-4}$ alkenyl), $O_3S(C_{1-4}$ acyl), $O_3S(C_{1-4}$ alkyl), $O_3S(C_{1-4}$ alkenyl), NH_2, $NH(C_{1-4}$ alkyl), $NH(C_{1-4}$ alkenyl), $NH(C_{1-4}$ alkynyl), $NH(C_{1-4}$ acyl), $N(C_{1-4}$ alkyl)$_2$, $N(C_{1-18}$ acyl)$_2$, wherein alkyl, alkynyl, alkenyl and vinyl are optinally substituted by N_3, CN, one to three halogen (Cl, Br, F, I), NO_2, $C(O)O(C_{1-4}$ alkyl), $C(O)O(C_{1-4}$ alkyl), $C(O)O(C_{1-4}$ alkynyl), $C(O)O(C_{1-4}$ alkenyl), $O(C_{1-4}$ acyl), $O(C_{1-4}$ alkyl), $O(C_{1-4}$ alkenyl), $S(C_{1-4}$ acyl), $S(C_{1-4}$ alkyl), $S(C_{1-4}$ alkynyl), $S(C_{1-4}$ alkenyl), $SO(C_{1-4}$ acyl), $SO(C_{1-4}$ alkyl), $SO(C_{1-4}$ alkynyl), $SO(C_{1-4}$ alkenyl), $SO_2(C_{1-4}$ acyl), $SO_2(C_{1-4}$ alkyl), $SO_2(C_{1-4}$ alkynyl), $SO_2(C_{1-4}$ alkenyl), $O_3S(C_{1-4}$ acyl), $O_3S(C_{1-4}$ alkyl), $O_3S(C_{1-4}$ alkenyl), NH_2, $NH(C_{1-4}$ alkyl), $NH(C_{1-4}$ alkenyl), $NH(C_{1-4}$ alkynyl), $NH(C_{1-4}$ acyl), $N(C_{1-4}$ alkyl)$_2$, $N(C_{1-4}$ acyl)$_2$, OR^7; R^2 and $R^{2'}$ can be linked together to form a vinyl optionally substituted by one or two of N_3, CN, Cl, Br, F, I, NO_2;

R^6 is an optionally substituted alkyl (including lower alkyl), cyano (CN), CH_3, OCH_3, OCH_2CH_3, hydroxy methyl (CH_2OH), fluoromethyl (CH_2F),

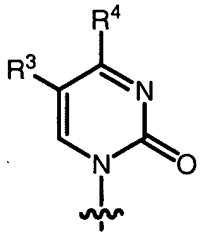
azido (N_3), CHCN, CH_2N_3, CH_2NH_2, CH_2NHCH_3, $CH_2N(CH_3)_2$, alkyne (optionally substituted), or fluoro;

or its pharmaceutically acceptable salt or prodrug thereof, a pharmaceutically acceptable carrier.

17. The composition of claim 16, wherein Base is selected from the group consisting of:



(a)



(b)

wherein

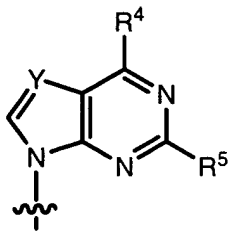
Y is N or CH.

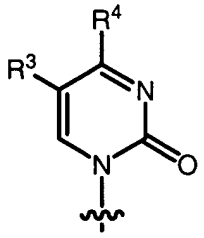
R^3, R^4 and R^5 are independently H, halogen including F, Cl, Br, I, OH, OR', SH, SR', NH_2, NHR', NR'$_2$, lower alkyl of C_1-C_6, halogenated (F, Cl, Br, I) lower alkyl of C_1-C_6 such as CF_3 and CH_2CH_2F, lower alkenyl of C_2-C_6 such as $CH=CH_2$, halogenated (F, Cl, Br, I) lower alkenyl of C_2-C_6 such as CH=CHCl, CH=CHBr and CH=CHI, lower alkynyl of C_2-C_6 such as C≡CH, halogenated (F, Cl, Br, I) lower alkynyl of C_2-C_6, lower alkoxy of C_1-C_6 such as CH_2OH and CH_2CH_2OH, halogenated (F, Cl, Br, I) lower alkoxy of C_1-C_6, CO_2H, CO_2R', $CONH_2$, CONHR', CONR'$_2$, $CH=CHCO_2H$, $CH=CHCO_2R'$; and,

R' is an optionally substituted alkyl of C_1-C_{12} (particularly when the alkyl is an amino acid residue), cycloalkyl, optionally substituted alkynyl of C_2-C_6, optionally substituted lower alkenyl of C_2-C_6, or optionally substituted acyl.

18. The composition of claim 16, wherein

Base is selected from the group consisting of (a) or (b):

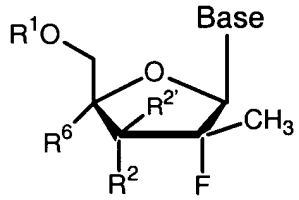




(a) (b)

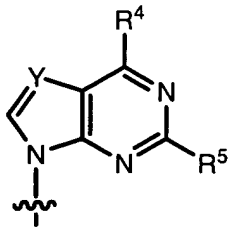
and wherein R^1 is H, R^2 is OH, $R^{2'}$ is H, R^3 is H, and R^4 is NH_2 or OH, and R^5 is NH_2.

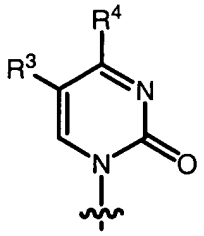
19. A pharmaceutical composition comprising a (2'*R*)-2'-deoxy-2'-fluoro-2'-*C*-methyl nucleoside (β-D or β-L) of the formula:



wherein

Base is selected from the group consisting of





(a) (b)

Y is N or CH;

R^1 and R^7 are independently H, phosphate, including monophosphate, diphosphate, triphosphate, or a stabilized phosphate prodrug, H-phosphonate, including stabilized H-phosphonates, acyl, including optionally substituted phenyl and lower acyl, alkyl, including lower alkyl, O-substituted carboxyalkylamino or its peptide derivatives, sulfonate ester, including alkyl or arylalkyl sulfonyl, including methanesulfonyl and benzyl, wherein the phenyl group is optionally substituted, a lipid, including a phospholipid, an L or D-amino acid (or racemic mixture), a carbohydrate, a peptide, a cholesterol, or other pharmaceutically acceptable leaving group which when administered *in vivo* is capable of providing a compound wherein R^1 is H or phosphate; R^2 is H or phosphate; R^1 and R^2 or R^7 can also be linked with cyclic phosphate group;

R^2 and $R^{2'}$ are independently H, C_{1-4} alkyl, C_{1-4} alkenyl, C_{1-4} alkynyl, vinyl, N_3, CN, Cl, Br, F, I, NO_2, $C(O)O(C_{1-4}$ alkyl), $C(O)O(C_{1-4}$ alkyl), $C(O)O(C_{1-4}$ alkynyl), $C(O)O(C_{1-4}$ alkenyl), $O(C_{1-4}$ acyl), $O(C_{1-4}$ alkyl), $O(C_{1-4}$ alkenyl), $S(C_{1-4}$ acyl), $S(C_{1-4}$ alkyl), $S(C_{1-4}$ alkynyl), $S(C_{1-4}$ alkenyl), $SO(C_{1-4}$ acyl), $SO(C_{1-4}$ alkyl), $SO(C_{1-4}$ alkynyl), $SO(C_{1-4}$ alkenyl), $SO_2(C_{1-4}$ acyl), $SO_2(C_{1-4}$ alkyl), $SO_2(C_{1-4}$ alkynyl), $SO_2(C_{1-4}$ alkenyl), $O_3S(C_{1-4}$ acyl), $O_3S(C_{1-4}$ alkyl), $O_3S(C_{1-4}$ alkenyl), NH_2, $NH(C_{1-4}$ alkyl), $NH(C_{1-4}$ alkenyl), $NH(C_{1-4}$ alkynyl), $NH(C_{1-4}$ acyl), $N(C_{1-4}$ alkyl)$_2$, $N(C_{1-18}$ acyl)$_2$, wherein alkyl, alkynyl, alkenyl and vinyl are optinally substituted by N_3, CN, one to three halogen (Cl, Br, F, I), NO_2, $C(O)O(C_{1-4}$ alkyl), $C(O)O(C_{1-4}$ alkyl), $C(O)O(C_{1-4}$ alkynyl), $C(O)O(C_{1-4}$ alkenyl), $O(C_{1-4}$ acyl), $O(C_{1-4}$ alkyl), $O(C_{1-4}$ alkenyl), $S(C_{1-4}$ acyl), $S(C_{1-4}$ alkyl), $S(C_{1-4}$ alkynyl), $S(C_{1-4}$ alkenyl), $SO(C_{1-4}$ acyl), $SO(C_{1-4}$ alkyl), $SO(C_{1-4}$ alkynyl), $SO(C_{1-4}$ alkenyl), $SO_2(C_{1-4}$ acyl), $SO_2(C_{1-4}$ alkyl), $SO_2(C_{1-4}$ alkynyl), $SO_2(C_{1-4}$ alkenyl), $O_3S(C_{1-4}$ acyl), $O_3S(C_{1-4}$ alkyl), $O_3S(C_{1-4}$ alkenyl), NH_2, $NH(C_{1-4}$ alkyl), $NH(C_{1-4}$

alkenyl), NH(C_{1-4} alkynyl), NH(C_{1-4} acyl), N(C_{1-4} alkyl)$_2$, N(C_{1-4} acyl)$_2$, OR^7; R^2 and $R^{2'}$ can be linked together to form a vinyl optionally substituted by one or two of N_3, CN, Cl, Br, F, I, NO_2;

R^3, R^4 and R^5 are independently H, halogen including F, Cl, Br, I, OH, OR', SH, SR', NH_2, NHR', NR'$_2$, lower alkyl of C_1-C_6, halogenated (F, Cl, Br, I) lower alkyl of C_1-C_6 such as CF_3 and CH_2CH_2F, lower alkenyl of C_2-C_6 such as $CH=CH_2$, halogenated (F, Cl, Br, I) lower alkenyl of C_2-C_6 such as CH=CHCl, CH=CHBr and CH=CHI, lower alkynyl of C_2-C_6 such as C≡CH, halogenated (F, Cl, Br, I) lower alkynyl of C_2-C_6, lower alkoxy of C_1-C_6 such as CH_2OH and CH_2CH_2OH, halogenated (F, Cl, Br, I) lower alkoxy of C_1-C_6, CO_2H, CO_2R', $CONH_2$, CONHR', CONR'$_2$, $CH=CHCO_2H$, $CH=CHCO_2R'$;

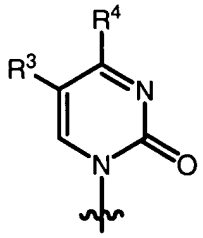
R' is an optionally substituted alkyl of C_1-C_{12} (particularly when the alkyl is an amino acid residue), cycloalkyl, optionally substituted alkynyl of C_2-C_6, optionally substituted lower alkenyl of C_2-C_6, or optionally substituted acyl;

R^6 is an optionally substituted alkyl (including lower alkyl), cyano (CN), CH_3, OCH_3, OCH_2CH_3, hydroxy methyl (CH_2OH), fluoromethyl (CH_2F), azido (N_3), CHCN, CH_2N_3, CH_2NH_2, CH_2NHCH_3, $CH_2N(CH_3)_2$, alkyne (optionally substituted), or fluoro;

or its pharmaceutically acceptable salt or prodrug thereof in a pharmaceutically acceptable carrier.

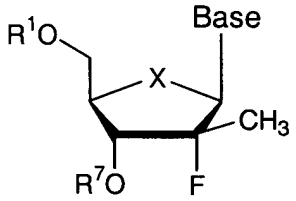
20. The composition of claim 19, wherein

Base is



and R^1 is H, R^2 is OH, $R^{2'}$ is H, R^3 is H, R^4 is NH_2 or OH, and R^6 is H.

21. A pharmaceutical composition comprising a (2'*R*)-2'-deoxy-2'-fluoro-2'-*C*-methyl nucleoside (β-D or β-L) or its pharmaceutically acceptable salt or prodrug thereof, in a pharmaceutically acceptable carrier, of the structure:



wherein Base is a purine or pyrimidine base;

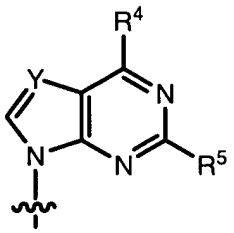
X is O, S, CH_2, Se, NH, N-alkyl, CHW (*R*, *S*, or racemic), $C(W)_2$, wherein W is F, Cl, Br, or I; and,

R^1 and R^7 are independently H, phosphate, including monophosphate, diphosphate, triphosphate, or a stabilized phosphate prodrug, H-phosphonate, including stabilized H-phosphonates, acyl, including optionally substituted phenyl and lower acyl, alkyl, including lower alkyl, O-substituted carboxyalkylamino or its peptide derivatives, sulfonate ester, including alkyl or arylalkyl sulfonyl, including methanesulfonyl and benzyl, wherein the phenyl group is optionally substituted, a lipid, including a phospholipid, an L or D-amino acid, a carbohydrate, a peptide, a cholesterol, or other pharmaceutically

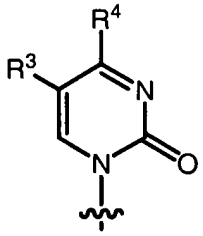
acceptable leaving group which when administered *in vivo* is capable of providing a compound wherein R^1 or R^7 is independently H or phosphate; R^1 and R^7 can also be linked with cyclic phosphate group.

22. The composition of claim 21, wherein

Base is selected from the group consisting of:



(a)



(b)

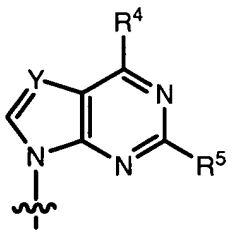
Y is N or CH;

R^3, R^4 and R^5 are independently H, halogen including F, Cl, Br, I, OH, OR', SH, SR', NH_2, NHR', NR'$_2$, lower alkyl of C_1-C_6, halogenated (F, Cl, Br, I) lower alkyl of C_1-C_6 such as CF_3 and CH_2CH_2F, lower alkenyl of C_2-C_6 such as $CH=CH_2$, halogenated (F, Cl, Br, I) lower alkenyl of C_2-C_6 such as CH=CHCl, CH=CHBr and CH=CHI, lower alkynyl of C_2-C_6 such as C≡CH, halogenated (F, Cl, Br, I) lower alkynyl of C_2-C_6, lower alkoxy of C_1-C_6 such as CH_2OH and CH_2CH_2OH, halogenated (F, Cl, Br, I) lower alkoxy of C_1-C_6, CO_2H, CO_2R', $CONH_2$, CONHR', CONR'$_2$, $CH=CHCO_2H$, $CH=CHCO_2R'$; and,

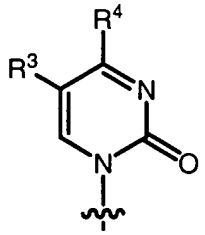
R' is an optionally substituted alkyl of C_1-C_{12} (particularly when the alkyl is an amino acid residue), cycloalkyl, optionally substituted alkynyl of C_2-C_6, optionally substituted lower alkenyl of C_2-C_6, or optionally substituted acyl.

23. The composition of claim 21, wherein

Base is selected from the group consisting of (a) or (b):



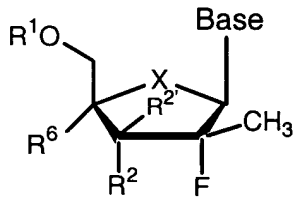
(a)



(b)

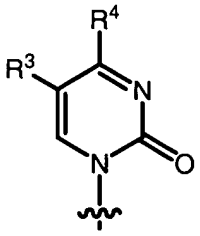
and wherein R^1 and R^7 are H, R^3 is H, and R^4 is NH_2 or OH, and R^5 is NH_2.

24. A pharmaceutical composition comprising a (2'*R*)-2'-deoxy-2'-fluoro-2'-*C*-methyl nucleoside (β-D or β-L) of the formula:



wherein

Base is



X is O, S, CH_2, Se, NH, N-alkyl, CHW (*R*, *S*, or racemic), $C(W)_2$, wherein W is F, Cl, Br, or I;

R^1 and R^7 are independently H, phosphate, including monophosphate, diphosphate, triphosphate, or a stabilized phosphate prodrug, H-

phosphonate, including stabilized H-phosphonates, acyl, including optionally substituted phenyl and lower acyl, alkyl, including lower alkyl, O-substituted carboxyalkylamino or its peptide derivatives, sulfonate ester, including alkyl or arylalkyl sulfonyl, including methanesulfonyl and benzyl, wherein the phenyl group is optionally substituted, a lipid, including a phospholipid, an L or D-amino acid (or racemic mixture), a carbohydrate, a peptide, a cholesterol, or other pharmaceutically acceptable leaving group which when administered *in vivo* is capable of providing a compound wherein R^1 is H or phosphate; R^2 is H or phosphate; R^1 and R^2 or R^7 can also be linked with cyclic phosphate group;

R^2 and $R^{2'}$ are independently H, C_{1-4} alkyl, C_{1-4} alkenyl, C_{1-4} alkynyl, vinyl, N_3, CN, Cl, Br, F, I, NO_2, $C(O)O(C_{1-4}$ alkyl), $C(O)O(C_{1-4}$ alkyl), $C(O)O(C_{1-4}$ alkynyl), $C(O)O(C_{1-4}$ alkenyl), $O(C_{1-4}$ acyl), $O(C_{1-4}$ alkyl), $O(C_{1-4}$ alkenyl), $S(C_{1-4}$ acyl), $S(C_{1-4}$ alkyl), $S(C_{1-4}$ alkynyl), $S(C_{1-4}$ alkenyl), $SO(C_{1-4}$ acyl), $SO(C_{1-4}$ alkyl), $SO(C_{1-4}$ alkynyl), $SO(C_{1-4}$ alkenyl), $SO_2(C_{1-4}$ acyl), $SO_2(C_{1-4}$ alkyl), $SO_2(C_{1-4}$ alkynyl), $SO_2(C_{1-4}$ alkenyl), $O_3S(C_{1-4}$ acyl), $O_3S(C_{1-4}$ alkyl), $O_3S(C_{1-4}$ alkenyl), NH_2, $NH(C_{1-4}$ alkyl), $NH(C_{1-4}$ alkenyl), $NH(C_{1-4}$ alkynyl), $NH(C_{1-4}$ acyl), $N(C_{1-4}$ alkyl)$_2$, $N(C_{1-18}$ acyl)$_2$, wherein alkyl, alkynyl, alkenyl and vinyl are optinally substituted by N_3, CN, one to three halogen (Cl, Br, F, I), NO_2, $C(O)O(C_{1-4}$ alkyl), $C(O)O(C_{1-4}$ alkyl), $C(O)O(C_{1-4}$ alkynyl), $C(O)O(C_{1-4}$ alkenyl), $O(C_{1-4}$ acyl), $O(C_{1-4}$ alkyl), $O(C_{1-4}$ alkenyl), $S(C_{1-4}$ acyl), $S(C_{1-4}$ alkyl), $S(C_{1-4}$ alkynyl), $S(C_{1-4}$ alkenyl), $SO(C_{1-4}$ acyl), $SO(C_{1-4}$ alkyl), $SO(C_{1-4}$ alkynyl), $SO(C_{1-4}$ alkenyl), $SO_2(C_{1-4}$ acyl), $SO_2(C_{1-4}$ alkyl), $SO_2(C_{1-4}$ alkynyl), $SO_2(C_{1-4}$ alkenyl), $O_3S(C_{1-4}$ acyl), $O_3S(C_{1-4}$ alkyl), $O_3S(C_{1-4}$ alkenyl), NH_2, $NH(C_{1-4}$ alkyl), $NH(C_{1-4}$ alkenyl), $NH(C_{1-4}$ alkynyl), $NH(C_{1-4}$ acyl), $N(C_{1-4}$ alkyl)$_2$, $N(C_{1-4}$ acyl)$_2$, OR^7; R^2 and $R^{2'}$ can be linked together to form a vinyl optionally substituted by one or two of N_3, CN, Cl, Br, F, I, NO_2;

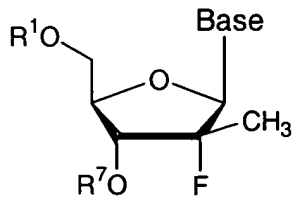
R^3 and R^4 are independently H, halogen including F, Cl, Br, I, OH, OR', SH, SR', NH_2, NHR', NR'$_2$, lower alkyl of C_1-C_6, halogenated (F, Cl, Br, I) lower alkyl of C_1-C_6 such as CF_3 and CH_2CH_2F, lower alkenyl of C_2-C_6 such as $CH=CH_2$, halogenated (F, Cl, Br, I) lower alkenyl of C_2-C_6 such as CH=CHCl, CH=CHBr and CH=CHI, lower alkynyl of C_2-C_6 such as C≡CH, halogenated (F, Cl, Br, I) lower alkynyl of C_2-C_6, lower alkoxy of C_1-C_6 such as CH_2OH and CH_2CH_2OH, halogenated (F, Cl, Br, I) lower alkoxy of C_1-C_6, CO_2H, CO_2R', $CONH_2$, CONHR', CONR'$_2$, $CH=CHCO_2H$, $CH=CHCO_2R'$;

R' is an optionally substituted alkyl of C_1-C_{12} (particularly when the alkyl is an amino acid residue), cycloalkyl, optionally substituted alkynyl of C_2-C_6, optionally substituted lower alkenyl of C_2-C_6, or optionally substituted acyl; and

R^6 is an optionally substituted alkyl (including lower alkyl), cyano (CN), CH_3, OCH_3, OCH_2CH_3, hydroxy methyl (CH_2OH), fluoromethyl (CH_2F), azido (N_3), CHCN, CH_2N_3, CH_2NH_2, CH_2NHCH_3, $CH_2N(CH3)_2$, alkyne (optionally substituted), or fluoro;

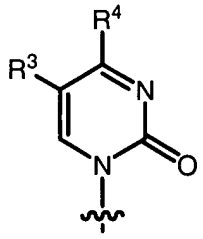
or its pharmaceutically acceptable salt or prodrug thereof and a pharmaceutically acceptable carrier.

25. A pharmaceutical composition comprising a (2'*R*)-2'-deoxy-2'-fluoro-2'-*C*-methyl nucleoside (β-D or β-L) of the formula:



wherein

Base is



R^1 and R^7 are independently H, phosphate, including monophosphate, diphosphate, triphosphate, or a stabilized phosphate prodrug, H-phosphonate, including stabilized H-phosphonates, acyl, including optionally substituted phenyl and lower acyl, alkyl, including lower alkyl, O-substituted carboxyalkylamino or its peptide derivatives, sulfonate ester, including alkyl or arylalkyl sulfonyl, including methanesulfonyl and benzyl, wherein the phenyl group is optionally substituted, a lipid, including a phospholipid, an L or D-amino acid, a carbohydrate, a peptide, a cholesterol, or other pharmaceutically acceptable leaving group which when administered *in vivo* is capable of providing a compound wherein R^1 or R^7 is independently H or phosphate; R^1 and R^7 can also be linked with cyclic phosphate group;

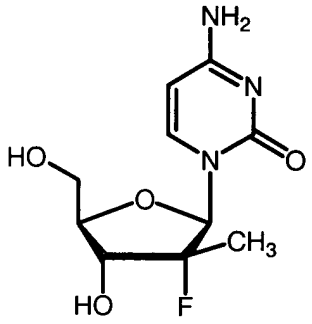
R^3 and R^4 are independently H, halogen including F, Cl, Br, I, OH, OR', SH, SR', NH_2, NHR', NR'$_2$, lower alkyl of C_1-C_6, halogenated (F, Cl, Br, I) lower alkyl of C_1-C_6 such as CF_3 and CH_2CH_2F, lower alkenyl of C_2-C_6 such as $CH=CH_2$, halogenated (F, Cl, Br, I) lower alkenyl of C_2-C_6 such as CH=CHCl, CH=CHBr and CH=CHI, lower alkynyl of C_2-C_6 such as C≡CH, halogenated (F, Cl, Br, I) lower alkynyl of C_2-C_6, lower alkoxy of C_1-C_6 such as CH_2OH and CH_2CH_2OH, halogenated (F, Cl, Br, I) lower alkoxy of C_1-C_6, CO_2H, CO_2R', $CONH_2$, CONHR', CONR'$_2$, $CH=CHCO_2H$, $CH=CHCO_2R'$;

R' is an optionally substituted alkyl of C_1-C_{12} (particularly when the alkyl is an amino acid residue), cycloalkyl, optionally substituted alkynyl of C_2-C_6,

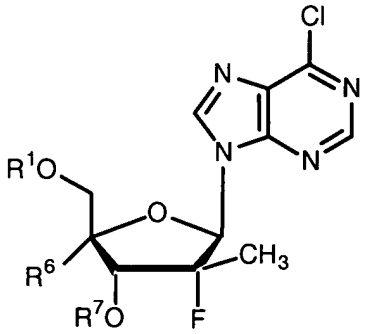
optionally substituted lower alkenyl of C_2-C_6, or optionally substituted acyl;

or its pharmaceutically acceptable salt or prodrug thereof, in a pharmaceutically acceptable carrier.

26. A pharmaceutical composition comprising a (2'*R*)-2'-deoxy-2'-fluoro-2'-*C*-methyl nucleoside (β-D) or its pharmaceutically acceptable salt or prodrug thereof, in a pharmaceutically acceptable carrier of the formula:



27. A pharmaceutical composition comprising a (2'*R*)-2'-deoxy-2'-fluoro-2'-*C*-methyl nucleoside (β-D or β-L), or its pharmaceutically acceptable salt or prodrug thereof, in a pharmaceutically acceptable carrier, of the formula:



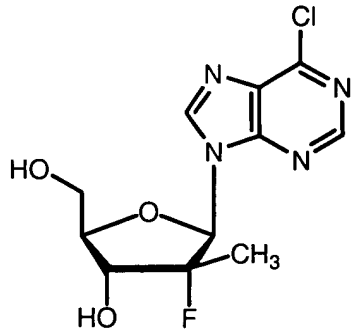
wherein

R^1 and R^7 are independently H, phosphate, including monophosphate, diphosphate, triphosphate, or a stabilized phosphate prodrug, H-

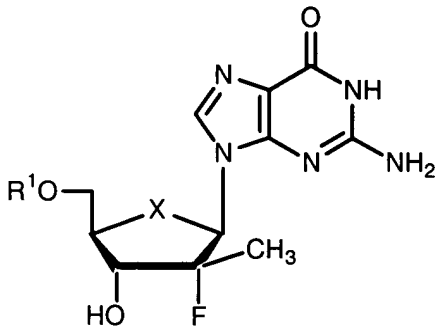
phosphonate, including stabilized H-phosphonates, acyl, including optionally substituted phenyl and lower acyl, alkyl, including lower alkyl, O-substituted carboxyalkylamino or its peptide derivatives, sulfonate ester, including alkyl or arylalkyl sulfonyl, including methanesulfonyl and benzyl, wherein the phenyl group is optionally substituted, a lipid, including a phospholipid, an L or D-amino acid, a carbohydrate, a peptide, a cholesterol, or other pharmaceutically acceptable leaving group which when administered *in vivo* is capable of providing a compound wherein R^1 or R^7 is independently H or phosphate; R^1 and R^7 can also be linked with cyclic phosphate group; and,

R^6 is an optionally substituted alkyl (including lower alkyl), cyano (CN), CH_3, OCH_3, OCH_2CH_3, hydroxy methyl (CH_2OH), fluoromethyl (CH_2F), azido (N_3), CHCN, CH_2N_3, CH_2NH_2, CH_2NHCH_3, $CH_2N(CH3)_2$, alkyne (optionally substituted), or fluoro.

28. A pharmaceutical composition comprising a (2'*R*)-2'-deoxy-2'-fluoro-2'-*C*-methyl nucleoside (β-D) or its pharmaceutically acceptable salt or prodrug thereof, in a pharmaceutically acceptable carrier, of the formula:



29. A pharmaceutical composition comprising a (2'*R*)-2'-deoxy-2'-fluoro-2'-*C*-methyl nucleoside (β-D) or its pharmaceutically acceptable salt or prodrug thereof in a pharmaceutically acceptable carrier of the formula:

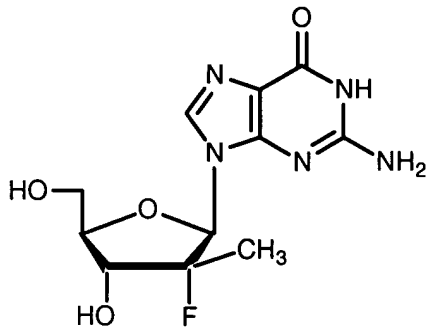


wherein

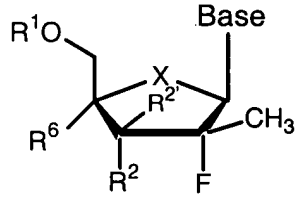
X is O, S, CH_2, Se, NH, N-alkyl, CHW (*R*, *S*, or racemic), $C(W)_2$, wherein W is F, Cl, Br, or I; and

R^1 is H, phosphate, including monophosphate, diphosphate, triphosphate, or a stabilized phosphate prodrug, H-phosphonate, including stabilized H-phosphonates, acyl, including optionally substituted phenyl and lower acyl, alkyl, including lower alkyl, O-substituted carboxyalkylamino or its peptide derivatives, sulfonate ester, including alkyl or arylalkyl sulfonyl, including methanesulfonyl and benzyl, wherein the phenyl group is optionally substituted, a lipid, including a phospholipid, an L or D-amino acid, a carbohydrate, a peptide, a cholesterol, or other pharmaceutically acceptable leaving group which when administered *in vivo* is capable of providing a compound wherein R^1 is H or phosphate;

30. A pharmaceutical composition comprising a (2'*R*)-2'-deoxy-2'-fluoro-2'-*C*-methyl nucleoside (β-D) or its pharmaceutically acceptable salt or prodrug thereof, in a pharmaceutically acceptable carrier, of the structure:



31. A method for the treatment or prophylaxis of hepatitis C infection comprising administering to a host an antivirally effective amount of a (2'*R*)-2'-deoxy-2'-fluoro-2'-*C*-methyl nucleoside (β-D or β-L) of the formula:



wherein

Base is a purine or pyrimidine base;

X is O, S, CH_2, Se, NH, N-alkyl, CHW (*R*, *S*, or racemic), $C(W)_2$, wherein W is F, Cl, Br, or I;

R^1 and R^7 are independently H, phosphate, including monophosphate, diphosphate, triphosphate, or a stabilized phosphate prodrug, H-phosphonate, including stabilized H-phosphonates, acyl, including optionally substituted phenyl and lower acyl, alkyl, including lower alkyl, O-substituted carboxyalkylamino or its peptide derivatives,

sulfonate ester, including alkyl or arylalkyl sulfonyl, including methanesulfonyl and benzyl, wherein the phenyl group is optionally substituted, a lipid, including a phospholipid, an L or D-amino acid (or racemic mixture), a carbohydrate, a peptide, a cholesterol, or other pharmaceutically acceptable leaving group which when administered *in vivo* is capable of providing a compound wherein R^1 is H or phosphate; R^2 is H or phosphate; R^1 and R^2 or R^7 can also be linked with cyclic phosphate group;

R^2 and $R^{2'}$ are independently H, C_{1-4} alkyl, C_{1-4} alkenyl, C_{1-4} alkynyl, vinyl, N_3, CN, Cl, Br, F, I, NO_2, $C(O)O(C_{1-4}$ alkyl), $C(O)O(C_{1-4}$ alkyl), $C(O)O(C_{1-4}$ alkynyl), $C(O)O(C_{1-4}$ alkenyl), $O(C_{1-4}$ acyl), $O(C_{1-4}$ alkyl), $O(C_{1-4}$ alkenyl), $S(C_{1-4}$ acyl), $S(C_{1-4}$ alkyl), $S(C_{1-4}$ alkynyl), $S(C_{1-4}$ alkenyl), $SO(C_{1-4}$ acyl), $SO(C_{1-4}$ alkyl), $SO(C_{1-4}$ alkynyl), $SO(C_{1-4}$ alkenyl), $SO_2(C_{1-4}$ acyl), $SO_2(C_{1-4}$ alkyl), $SO_2(C_{1-4}$ alkynyl), $SO_2(C_{1-4}$ alkenyl), $O_3S(C_{1-4}$ acyl), $O_3S(C_{1-4}$ alkyl), $O_3S(C_{1-4}$ alkenyl), NH_2, $NH(C_{1-4}$ alkyl), $NH(C_{1-4}$ alkenyl), $NH(C_{1-4}$ alkynyl), $NH(C_{1-4}$ acyl), $N(C_{1-4}$ alkyl)$_2$, $N(C_{1-18}$ acyl)$_2$, wherein alkyl, alkynyl, alkenyl and vinyl are optinally substituted by N_3, CN, one to three halogen (Cl, Br, F, I), NO_2, $C(O)O(C_{1-4}$ alkyl), $C(O)O(C_{1-4}$ alkyl), $C(O)O(C_{1-4}$ alkynyl), $C(O)O(C_{1-4}$ alkenyl), $O(C_{1-4}$ acyl), $O(C_{1-4}$ alkyl), $O(C_{1-4}$ alkenyl), $S(C_{1-4}$ acyl), $S(C_{1-4}$ alkyl), $S(C_{1-4}$ alkynyl), $S(C_{1-4}$ alkenyl), $SO(C_{1-4}$ acyl), $SO(C_{1-4}$ alkyl), $SO(C_{1-4}$ alkynyl), $SO(C_{1-4}$ alkenyl), $SO_2(C_{1-4}$ acyl), $SO_2(C_{1-4}$ alkyl), $SO_2(C_{1-4}$ alkynyl), $SO_2(C_{1-4}$ alkenyl), $O_3S(C_{1-4}$ acyl), $O_3S(C_{1-4}$ alkyl), $O_3S(C_{1-4}$ alkenyl), NH_2, $NH(C_{1-4}$ alkyl), $NH(C_{1-4}$ alkenyl), $NH(C_{1-4}$ alkynyl), $NH(C_{1-4}$ acyl), $N(C_{1-4}$ alkyl)$_2$, $N(C_{1-4}$ acyl)$_2$, OR^7; R^2 and $R^{2'}$ can be linked together to form a vinyl optionally substituted by one or two of N_3, CN, Cl, Br, F, I, NO_2;

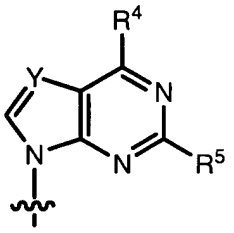
R^6 is an optionally substituted alkyl (including lower alkyl), cyano (CN), CH_3, OCH_3, OCH_2CH_3, hydroxy methyl (CH_2OH), fluoromethyl (CH_2F),

azido (N_3), CHCN, CH_2N_3, CH_2NH_2, CH_2NHCH_3, $CH_2N(CH_3)_2$, alkyne (optionally substituted), or fluoro;

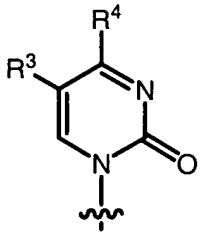
or its pharmaceutically acceptable salt or prodrug thereof, optionally in a pharmaceutically acceptable carrier.

32. The method of claim 31,

wherein Base is selected from the group consisting of:



(a)



(b)

Y is N or CH.

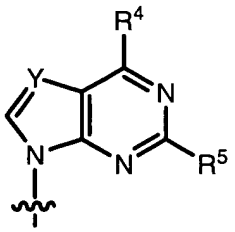
R^3, R^4 and R^5 are independently H, halogen including F, Cl, Br, I, OH, OR', SH, SR', NH_2, NHR', NR'$_2$, lower alkyl of C_1-C_6, halogenated (F, Cl, Br, I) lower alkyl of C_1-C_6 such as CF_3 and CH_2CH_2F, lower alkenyl of C_2-C_6 such as $CH=CH_2$, halogenated (F, Cl, Br, I) lower alkenyl of C_2-C_6 such as CH=CHCl, CH=CHBr and CH=CHI, lower alkynyl of C_2-C_6 such as C≡CH, halogenated (F, Cl, Br, I) lower alkynyl of C_2-C_6, lower alkoxy of C_1-C_6 such as CH_2OH and CH_2CH_2OH, halogenated (F, Cl, Br, I) lower alkoxy of C_1-C_6, CO_2H, CO_2R', $CONH_2$, CONHR', CONR'$_2$, $CH=CHCO_2H$, $CH=CHCO_2R'$; and,

R' is an optionally substituted alkyl of C_1-C_{12} (particularly when the alkyl is an amino acid residue), cycloalkyl, optionally substituted alkynyl of C_2-

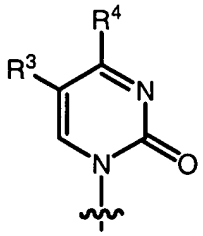
C_6, optionally substituted lower alkenyl of C_2-C_6, or optionally substituted acyl.

33. The method of claim 31, wherein

Base is selected from the group consisting of (a) or (b):



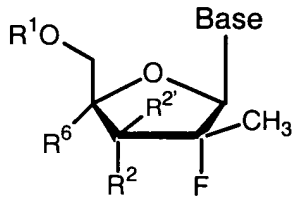
(a)



(b)

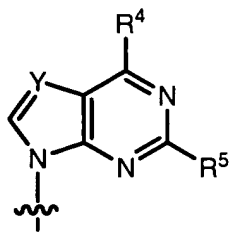
and wherein R^1 is H, R^2 is OH, $R^{2'}$ is H, R^3 is H, and R^4 is NH_2 or OH, and R^5 is NH_2.

34. A method for the treatment or prophylaxis of hepatitis C infection comprising administering to a host an antivirally effective amount of a (2'*R*)-2'-deoxy-2'-fluoro-2'-*C*-methyl nucleoside (β-D or β-L) of the formula:

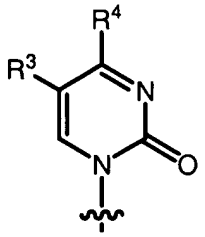


wherein

Base is selected from the group consisting of



(a)



(b)

Y is N or CH;

R^1 and R^7 are independently H, phosphate, including monophosphate, diphosphate, triphosphate, or a stabilized phosphate prodrug, H-phosphonate, including stabilized H-phosphonates, acyl, including optionally substituted phenyl and lower acyl, alkyl, including lower alkyl, O-substituted carboxyalkylamino or its peptide derivatives, sulfonate ester, including alkyl or arylalkyl sulfonyl, including methanesulfonyl and benzyl, wherein the phenyl group is optionally substituted, a lipid, including a phospholipid, an L or D-amino acid (or racemic mixture), a carbohydrate, a peptide, a cholesterol, or other pharmaceutically acceptable leaving group which when administered *in vivo* is capable of providing a compound wherein R^1 is H or phosphate; R^2 is H or phosphate; R^1 and R^2 or R^7 can also be linked with cyclic phosphate group;

R^2 and $R^{2'}$ are independently H, C_{1-4} alkyl, C_{1-4} alkenyl, C_{1-4} alkynyl, vinyl, N_3, CN, Cl, Br, F, I, NO_2, $C(O)O(C_{1-4}$ alkyl), $C(O)O(C_{1-4}$ alkyl), $C(O)O(C_{1-4}$ alkynyl), $C(O)O(C_{1-4}$ alkenyl), $O(C_{1-4}$ acyl), $O(C_{1-4}$ alkyl), $O(C_{1-4}$ alkenyl), $S(C_{1-4}$ acyl), $S(C_{1-4}$ alkyl), $S(C_{1-4}$ alkynyl), $S(C_{1-4}$ alkenyl), $SO(C_{1-4}$ acyl), $SO(C_{1-4}$ alkyl), $SO(C_{1-4}$ alkynyl), $SO(C_{1-4}$ alkenyl), $SO_2(C_{1-4}$ acyl), $SO_2(C_{1-4}$ alkyl), $SO_2(C_{1-4}$ alkynyl), $SO_2(C_{1-4}$ alkenyl), $O_3S(C_{1-4}$ acyl), $O_3S(C_{1-4}$ alkyl), $O_3S(C_{1-4}$ alkenyl), NH_2, $NH(C_{1-4}$ alkyl), $NH(C_{1-4}$ alkenyl), $NH(C_{1-4}$ alkynyl), $NH(C_{1-4}$ acyl), $N(C_{1-4}$ alkyl)$_2$, $N(C_{1-18}$ acyl)$_2$, wherein alkyl, alkynyl, alkenyl and vinyl are optinally substituted by N_3, CN, one to three halogen (Cl, Br, F, I),

NO_2, $C(O)O(C_{1-4}$ alkyl), $C(O)O(C_{1-4}$ alkyl), $C(O)O(C_{1-4}$ alkynyl), $C(O)O(C_{1-4}$ alkenyl), $O(C_{1-4}$ acyl), $O(C_{1-4}$ alkyl), $O(C_{1-4}$ alkenyl), $S(C_{1-4}$ acyl), $S(C_{1-4}$ alkyl), $S(C_{1-4}$ alkynyl), $S(C_{1-4}$ alkenyl), $SO(C_{1-4}$ acyl), $SO(C_{1-4}$ alkyl), $SO(C_{1-4}$ alkynyl), $SO(C_{1-4}$ alkenyl), $SO_2(C_{1-4}$ acyl), $SO_2(C_{1-4}$ alkyl), $SO_2(C_{1-4}$ alkynyl), $SO_2(C_{1-4}$ alkenyl), $O_3S(C_{1-4}$ acyl), $O_3S(C_{1-4}$ alkyl), $O_3S(C_{1-4}$ alkenyl), NH_2, $NH(C_{1-4}$ alkyl), $NH(C_{1-4}$ alkenyl), $NH(C_{1-4}$ alkynyl), $NH(C_{1-4}$ acyl), $N(C_{1-4}$ alkyl)$_2$, $N(C_{1-4}$ acyl)$_2$, OR^7; R^2 and $R^{2'}$ can be linked together to form a vinyl optionally substituted by one or two of N_3, CN, Cl, Br, F, I, NO_2;

R^3, R^4 and R^5 are independently H, halogen including F, Cl, Br, I, OH, OR', SH, SR', NH_2, NHR', NR'$_2$, lower alkyl of C_1-C_6, halogenated (F, Cl, Br, I) lower alkyl of C_1-C_6 such as CF_3 and CH_2CH_2F, lower alkenyl of C_2-C_6 such as $CH=CH_2$, halogenated (F, Cl, Br, I) lower alkenyl of C_2-C_6 such as CH=CHCl, CH=CHBr and CH=CHI, lower alkynyl of C_2-C_6 such as C≡CH, halogenated (F, Cl, Br, I) lower alkynyl of C_2-C_6, lower alkoxy of C_1-C_6 such as CH_2OH and CH_2CH_2OH, halogenated (F, Cl, Br, I) lower alkoxy of C_1-C_6, CO_2H, CO_2R', $CONH_2$, CONHR', CONR'$_2$, $CH=CHCO_2H$, $CH=CHCO_2R'$;

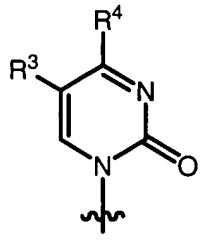
R' is an optionally substituted alkyl of C_1-C_{12} (particularly when the alkyl is an amino acid residue), cycloalkyl, optionally substituted alkynyl of C_2-C_6, optionally substituted lower alkenyl of C_2-C_6, or optionally substituted acyl;

R^6 is an optionally substituted alkyl (including lower alkyl), cyano (CN), CH_3, OCH_3, OCH_2CH_3, hydroxy methyl (CH_2OH), fluoromethyl (CH_2F), azido (N_3), CHCN, CH_2N_3, CH_2NH_2, CH_2NHCH_3, $CH_2N(CH_3)_2$, alkyne (optionally substituted), or fluoro;

or its pharmaceutically acceptable salt or prodrug thereof, optionally in a pharmaceutically acceptable carrier.

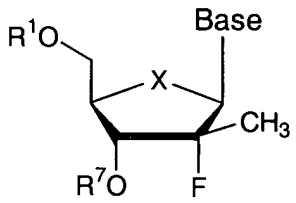
35. The method of claim 34, wherein

Base is



and R^1 is H, R^2 is OH, $R^{2'}$ is H, R^3 is H, R^4 is NH_2 or OH, and R^6 is H.

36. A method for the treatment or prophylaxis of hepatitis C infection comprising administering to a host an antivirally effective amount of a (2'*R*)-2'-deoxy-2'-fluoro-2'-*C*-methyl nucleoside (β-D or β-L) or its pharmaceutically acceptable salt or prodrug thereof of the structure:



wherein Base is a purine or pyrimidine base;

X is O, S, CH_2, Se, NH, N-alkyl, CHW (*R*, *S*, or racemic), $C(W)_2$, wherein W is F, Cl, Br, or I; and,

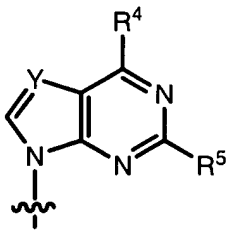
R^1 and R^7 are independently H, phosphate, including monophosphate, diphosphate, triphosphate, or a stabilized phosphate prodrug, H-phosphonate, including stabilized H-phosphonates, acyl, including optionally substituted phenyl and lower acyl, alkyl, including lower alkyl, O-substituted carboxyalkylamino or its peptide derivatives,

sulfonate ester, including alkyl or arylalkyl sulfonyl, including methanesulfonyl and benzyl, wherein the phenyl group is optionally substituted, a lipid, including a phospholipid, an L or D-amino acid, a carbohydrate, a peptide, a cholesterol, or other pharmaceutically acceptable leaving group which when administered *in vivo* is capable of providing a compound wherein R^1 or R^7 is independently H or phosphate; R^1 and R^7 can also be linked with cyclic phosphate group;

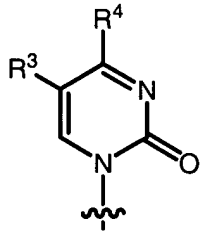
optionally, in a pharmaceutically acceptable carrier.

37. The method of claim 36, wherein

Base is selected from the group consisting of:



(a)



(b)

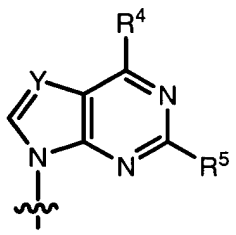
Y is N or CH;

R^3, R^4 and R^5 are independently H, halogen including F, Cl, Br, I, OH, OR', SH, SR', NH_2, NHR', NR'$_2$, lower alkyl of C_1-C_6, halogenated (F, Cl, Br, I) lower alkyl of C_1-C_6 such as CF_3 and CH_2CH_2F, lower alkenyl of C_2-C_6 such as $CH=CH_2$, halogenated (F, Cl, Br, I) lower alkenyl of C_2-C_6 such as CH=CHCl, CH=CHBr and CH=CHI, lower alkynyl of C_2-C_6 such as C≡CH, halogenated (F, Cl, Br, I) lower alkynyl of C_2-C_6, lower alkoxy of C_1-C_6 such as CH_2OH and CH_2CH_2OH, halogenated (F, Cl, Br, I) lower alkoxy of C_1-C_6, CO_2H, CO_2R', $CONH_2$, CONHR', CONR'$_2$, $CH=CHCO_2H$, $CH=CHCO_2R'$; and,

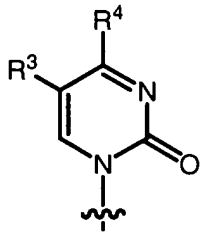
R' is an optionally substituted alkyl of C_1-C_{12} (particularly when the alkyl is an amino acid residue), cycloalkyl, optionally substituted alkynyl of C_2-C_6, optionally substituted lower alkenyl of C_2-C_6, or optionally substituted acyl.

38. The method of claim 36, wherein

Base is selected from the group consisting of (a) or (b):



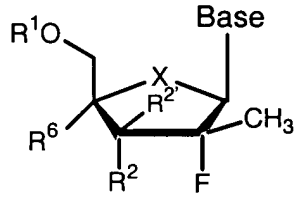
(a)



(b)

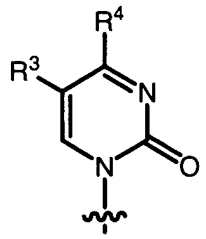
and wherein R^1 and R^7 are H, R^3 is H, and R^4 is NH_2 or OH, and R^5 is NH_2.

39. A method for the treatment or prophylaxis of hepatitis C infection comprising administering to a host an antivirally effective amount of a (2'*R*)-2'-deoxy-2'-fluoro-2'-*C*-methyl nucleoside (β-D or β-L) of the formula:



wherein

Base is



X is O, S, CH_2, Se, NH, N-alkyl, CHW (*R*, *S*, or racemic), $C(W)_2$, wherein W is F, Cl, Br, or I;

R^1 and R^7 are independently H, phosphate, including monophosphate, diphosphate, triphosphate, or a stabilized phosphate prodrug, H-phosphonate, including stabilized H-phosphonates, acyl, including optionally substituted phenyl and lower acyl, alkyl, including lower alkyl, O-substituted carboxyalkylamino or its peptide derivatives, sulfonate ester, including alkyl or arylalkyl sulfonyl, including methanesulfonyl and benzyl, wherein the phenyl group is optionally substituted, a lipid, including a phospholipid, an L or D-amino acid (or racemic mixture), a carbohydrate, a peptide, a cholesterol, or other pharmaceutically acceptable leaving group which when administered *in vivo* is capable of providing a compound wherein R^1 is H or phosphate; R^2 is H or phosphate; R^1 and R^2 or R^7 can also be linked with cyclic phosphate group;

R^2 and $R^{2'}$ are independently H, C_{1-4} alkyl, C_{1-4} alkenyl, C_{1-4} alkynyl, vinyl, N_3, CN, Cl, Br, F, I, NO_2, $C(O)O(C_{1-4}$ alkyl), $C(O)O(C_{1-4}$ alkyl), $C(O)O(C_{1-4}$ alkynyl), $C(O)O(C_{1-4}$ alkenyl), $O(C_{1-4}$ acyl), $O(C_{1-4}$ alkyl), $O(C_{1-4}$ alkenyl), $S(C_{1-4}$ acyl), $S(C_{1-4}$ alkyl), $S(C_{1-4}$ alkynyl), $S(C_{1-4}$ alkenyl), $SO(C_{1-4}$ acyl), $SO(C_{1-4}$ alkyl), $SO(C_{1-4}$ alkynyl), $SO(C_{1-4}$ alkenyl), $SO_2(C_{1-4}$ acyl), $SO_2(C_{1-4}$ alkyl), $SO_2(C_{1-4}$ alkynyl), $SO_2(C_{1-4}$ alkenyl), $O_3S(C_{1-4}$ acyl), $O_3S(C_{1-4}$ alkyl), $O_3S(C_{1-4}$ alkenyl), NH_2, $NH(C_{1-4}$ alkyl), $NH(C_{1-4}$ alkenyl), $NH(C_{1-4}$ alkynyl), $NH(C_{1-4}$ acyl), $N(C_{1-4}$ alkyl)$_2$, $N(C_{1-18}$ acyl)$_2$, wherein alkyl, alkynyl, alkenyl and vinyl are optinally substituted by N_3, CN, one to three halogen (Cl, Br, F, I),

NO_2, C(O)O(C_{1-4} alkyl), C(O)O(C_{1-4} alkyl), C(O)O(C_{1-4} alkynyl), C(O)O(C_{1-4} alkenyl), O(C_{1-4} acyl), O(C_{1-4} alkyl), O(C_{1-4} alkenyl), S(C_{1-4} acyl), S(C_{1-4} alkyl), S(C_{1-4} alkynyl), S(C_{1-4} alkenyl), SO(C_{1-4} acyl), SO(C_{1-4} alkyl), SO(C_{1-4} alkynyl), SO(C_{1-4} alkenyl), SO_2(C_{1-4} acyl), SO_2(C_{1-4} alkyl), SO_2(C_{1-4} alkynyl), SO_2(C_{1-4} alkenyl), O_3S(C_{1-4} acyl), O_3S(C_{1-4} alkyl), O_3S(C_{1-4} alkenyl), NH_2, NH(C_{1-4} alkyl), NH(C_{1-4} alkenyl), NH(C_{1-4} alkynyl), NH(C_{1-4} acyl), N(C_{1-4} alkyl)$_2$, N(C_{1-4} acyl)$_2$, OR^7; R^2 and $R^{2'}$ can be linked together to form a vinyl optionally substituted by one or two of N_3, CN, Cl, Br, F, I, NO_2;

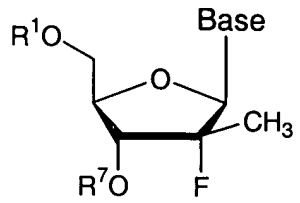
R^3 and R^4 are independently H, halogen including F, Cl, Br, I, OH, OR', SH, SR', NH_2, NHR', NR'$_2$, lower alkyl of C_1-C_6, halogenated (F, Cl, Br, I) lower alkyl of C_1-C_6 such as CF_3 and CH_2CH_2F, lower alkenyl of C_2-C_6 such as $CH=CH_2$, halogenated (F, Cl, Br, I) lower alkenyl of C_2-C_6 such as CH=CHCl, CH=CHBr and CH=CHI, lower alkynyl of C_2-C_6 such as C≡CH, halogenated (F, Cl, Br, I) lower alkynyl of C_2-C_6, lower alkoxy of C_1-C_6 such as CH_2OH and CH_2CH_2OH, halogenated (F, Cl, Br, I) lower alkoxy of C_1-C_6, CO_2H, CO_2R', $CONH_2$, CONHR', CONR'$_2$, $CH=CHCO_2H$, $CH=CHCO_2R'$;

R' is an optionally substituted alkyl of C_1-C_{12} (particularly when the alkyl is an amino acid residue), cycloalkyl, optionally substituted alkynyl of C_2-C_6, optionally substituted lower alkenyl of C_2-C_6, or optionally substituted acyl; and,

R^6 is an optionally substituted alkyl (including lower alkyl), cyano (CN), CH_3, OCH_3, OCH_2CH_3, hydroxy methyl (CH_2OH), fluoromethyl (CH_2F), azido (N_3), CHCN, CH_2N_3, CH_2NH_2, CH_2NHCH_3, $CH_2N(CH3)_2$, alkyne (optionally substituted), or fluoro;

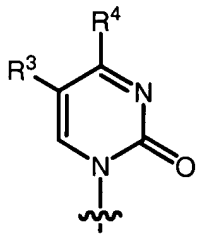
or its pharmaceutically acceptable salt or prodrug thereof, optionally in a pharmaceutically acceptable carrier

40. A method for the treatment or prophylaxis of hepatitis C infection comprising administering to a host an antivirally effective amount of a (2'*R*)-2'-deoxy-2'-fluoro-2'-*C*-methyl nucleoside (β-D or β-L) of the formula:



wherein

Base is



R^1 and R^7 are independently H, phosphate, including monophosphate, diphosphate, triphosphate, or a stabilized phosphate prodrug, H-phosphonate, including stabilized H-phosphonates, acyl, including optionally substituted phenyl and lower acyl, alkyl, including lower alkyl, O-substituted carboxyalkylamino or its peptide derivatives, sulfonate ester, including alkyl or arylalkyl sulfonyl, including methanesulfonyl and benzyl, wherein the phenyl group is optionally substituted, a lipid, including a phospholipid, an L or D-amino acid, a carbohydrate, a peptide, a cholesterol, or other pharmaceutically acceptable leaving group which when administered *in vivo* is capable of providing a compound wherein R^1 or R^7 is independently H or phosphate; R^1 and R^7 can also be linked with cyclic phosphate group;

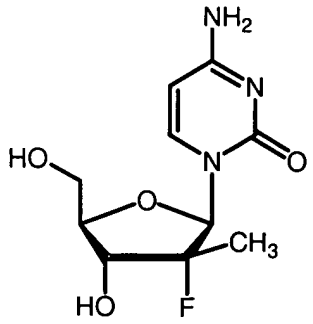
R^3 and R^4 are independently H, halogen including F, Cl, Br, I, OH, OR', SH, SR', NH_2, NHR', NR'$_2$, lower alkyl of C_1-C_6, halogenated (F, Cl, Br, I)

lower alkyl of C_1-C_6 such as CF_3 and CH_2CH_2F, lower alkenyl of C_2-C_6 such as $CH=CH_2$, halogenated (F, Cl, Br, I) lower alkenyl of C_2-C_6 such as CH=CHCl, CH=CHBr and CH=CHI, lower alkynyl of C_2-C_6 such as C≡CH, halogenated (F, Cl, Br, I) lower alkynyl of C_2-C_6, lower alkoxy of C_1-C_6 such as CH_2OH and CH_2CH_2OH, halogenated (F, Cl, Br, I) lower alkoxy of C_1-C_6, CO_2H, CO_2R', $CONH_2$, $CONHR'$, $CONR'_2$, $CH=CHCO_2H$, $CH=CHCO_2R'$; and

R' is an optionally substituted alkyl of C_1-C_{12} (particularly when the alkyl is an amino acid residue), cycloalkyl, optionally substituted alkynyl of C_2-C_6, optionally substituted lower alkenyl of C_2-C_6, or optionally substituted acyl;

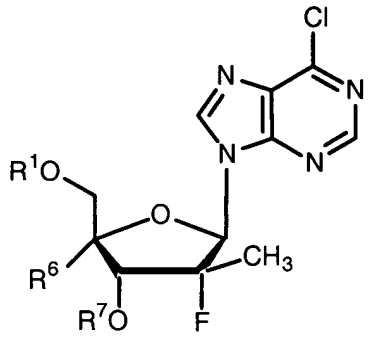
or its pharmaceutically acceptable salt or prodrug thereof, optionally in a pharmaceutically acceptable carrier

41. A method for the treatment or prophylaxis of hepatitis C infection comprising administering to a host an antivirally effective amount of a (2'*R*)-2'-deoxy-2'-fluoro-2'-*C*-methyl nucleoside (β-D) or its pharmaceutically acceptable salt or prodrug thereof of the formula:



optionally in a pharmaceutically acceptable carrier.

42. A method for the treatment or prophylaxis of hepatitis C infection comprising administering to a host an antivirally effective amount of a (2'*R*)-2'-deoxy-2'-fluoro-2'-*C*-methyl nucleoside (β-D) or its pharmaceutically acceptable salt or prodrug thereof of the formula:



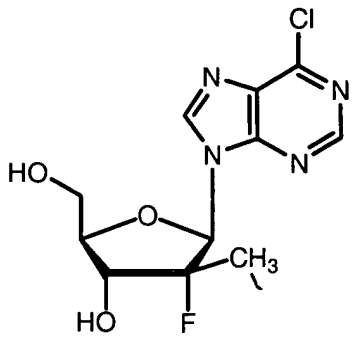
wherein

R^1 and R^7 are independently H, phosphate, including monophosphate, diphosphate, triphosphate, or a stabilized phosphate prodrug, H-phosphonate, including stabilized H-phosphonates, acyl, including optionally substituted phenyl and lower acyl, alkyl, including lower alkyl, O-substituted carboxyalkylamino or its peptide derivatives, sulfonate ester, including alkyl or arylalkyl sulfonyl, including methanesulfonyl and benzyl, wherein the phenyl group is optionally substituted, a lipid, including a phospholipid, an L or D-amino acid, a carbohydrate, a peptide, a cholesterol, or other pharmaceutically acceptable leaving group which when administered *in vivo* is capable of providing a compound wherein R^1 or R^7 is independently H or phosphate; R^1 and R^7 can also be linked with cyclic phosphate group; and,

R^6 is an optionally substituted alkyl (including lower alkyl), cyano (CN), CH_3, OCH_3, OCH_2CH_3, hydroxy methyl (CH_2OH), fluoromethyl (CH_2F), azido (N_3), CHCN, CH_2N_3, CH_2NH_2, CH_2NHCH_3, $CH_2N(CH3)_2$, alkyne (optionally substituted), or fluoro;

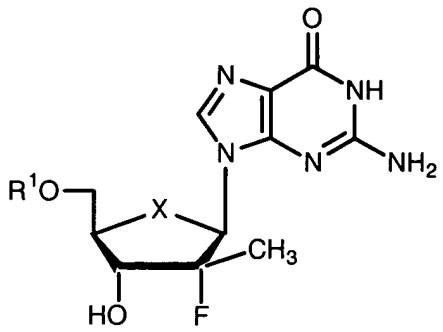
optionally in a pharmaceutically acceptable carrier.

43. A method for the treatment or prophylaxis of hepatitis C infection comprising administering to a host an antivirally effective amount of a (2'*R*)-2'-deoxy-2'-fluoro-2'-*C*-methyl nucleoside (β-D) or its pharmaceutically acceptable salt or prodrug thereof of the formula:



optionally in a pharmaceutically acceptable carrier.

44. A method for the treatment or prophylaxis of hepatitis C infection comprising administering to a host an antivirally effective amount of a (2'*R*)-2'-deoxy-2'-fluoro-2'-*C*-methyl nucleoside (β-D) or its pharmaceutically acceptable salt or prodrug thereof of the formula:



wherein

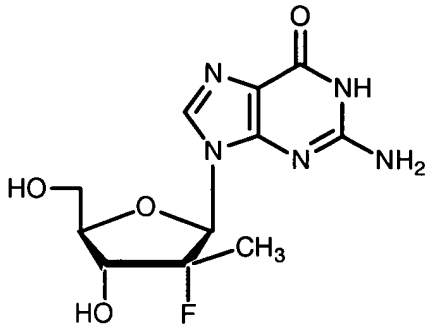
X is O, S, CH_2, Se, NH, N-alkyl, CHW (*R*, *S*, or racemic), $C(W)_2$, wherein W is F, Cl, Br, or I; and

R^1 is H, phosphate, including monophosphate, diphosphate, triphosphate, or a stabilized phosphate prodrug, H-phosphonate, including stabilized H-

phosphonates, acyl, including optionally substituted phenyl and lower acyl, alkyl, including lower alkyl, O-substituted carboxyalkylamino or its peptide derivatives, sulfonate ester, including alkyl or arylalkyl sulfonyl, including methanesulfonyl and benzyl, wherein the phenyl group is optionally substituted, a lipid, including a phospholipid, an L or D-amino acid, a carbohydrate, a peptide, a cholesterol, or other pharmaceutically acceptable leaving group which when administered *in vivo* is capable of providing a compound wherein R^1 is H or phosphate;

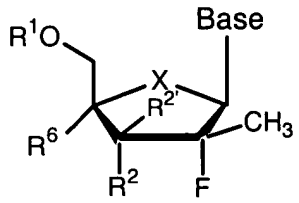
optionally in a pharmaceutically acceptable carrier.

45. A method for the treatment or prophylaxis of hepatitis C infection comprising administering to a host an antivirally effective amount of a (2'*R*)-2'-deoxy-2'-fluoro-2'-*C*-methyl nucleoside (β-D) or its pharmaceutically acceptable salt or prodrug thereof of the formula:



optionally in a pharmaceutically acceptable carrier.

46. A method for the treatment or prophylaxis of a rhinovirus infection comprising administering to a host an antivirally effective amount of a (2'*R*)-2'-deoxy-2'-fluoro-2'-*C*-methyl nucleoside (β-D or β-L) of the formula:



wherein

Base is a purine or pyrimidine base;

X is O, S, CH_2, Se, NH, N-alkyl, CHW (*R*, *S*, or racemic), $C(W)_2$, wherein W is F, Cl, Br, or I;

R^1 and R^7 are independently H, phosphate, including monophosphate, diphosphate, triphosphate, or a stabilized phosphate prodrug, H-phosphonate, including stabilized H-phosphonates, acyl, including optionally substituted phenyl and lower acyl, alkyl, including lower alkyl, O-substituted carboxyalkylamino or its peptide derivatives, sulfonate ester, including alkyl or arylalkyl sulfonyl, including methanesulfonyl and benzyl, wherein the phenyl group is optionally substituted, a lipid, including a phospholipid, an L or D-amino acid (or racemic mixture), a carbohydrate, a peptide, a cholesterol, or other pharmaceutically acceptable leaving group which when administered *in vivo* is capable of providing a compound wherein R^1 is H or phosphate; R^2 is H or phosphate; R^1 and R^2 or R^7 can also be linked with cyclic phosphate group;

R^2 and $R^{2'}$ are independently H, C_{1-4} alkyl, C_{1-4} alkenyl, C_{1-4} alkynyl, vinyl, N_3, CN, Cl, Br, F, I, NO_2, $C(O)O(C_{1-4}$ alkyl), $C(O)O(C_{1-4}$ alkyl), $C(O)O(C_{1-4}$ alkynyl), $C(O)O(C_{1-4}$ alkenyl), $O(C_{1-4}$ acyl), $O(C_{1-4}$ alkyl), $O(C_{1-4}$ alkenyl), $S(C_{1-4}$ acyl), $S(C_{1-4}$ alkyl), $S(C_{1-4}$ alkynyl), $S(C_{1-4}$ alkenyl), $SO(C_{1-4}$ acyl), $SO(C_{1-4}$ alkyl), $SO(C_{1-4}$ alkynyl), $SO(C_{1-4}$ alkenyl), $SO_2(C_{1-4}$ acyl), $SO_2(C_{1-4}$ alkyl), $SO_2(C_{1-4}$ alkynyl), $SO_2(C_{1-4}$ alkenyl), $O_3S(C_{1-4}$ acyl), $O_3S(C_{1-4}$ alkyl), $O_3S(C_{1-4}$ alkenyl), NH_2, $NH(C_{1-4}$ alkyl), $NH(C_{1-4}$ alkenyl), $NH(C_{1-4}$ alkynyl), $NH(C_{1-4}$ acyl), $N(C_{1-4}$

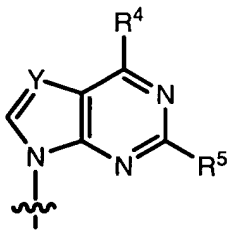
alkyl)$_2$, N(C_{1-18} acyl)$_2$, wherein alkyl, alkynyl, alkenyl and vinyl are optinally substituted by N_3, CN, one to three halogen (Cl, Br, F, I), NO_2, C(O)O(C_{1-4} alkyl), C(O)O(C_{1-4} alkyl), C(O)O(C_{1-4} alkynyl), C(O)O(C_{1-4} alkenyl), O(C_{1-4} acyl), O(C_{1-4} alkyl), O(C_{1-4} alkenyl), S(C_{1-4} acyl), S(C_{1-4} alkyl), S(C_{1-4} alkynyl), S(C_{1-4} alkenyl), SO(C_{1-4} acyl), SO(C_{1-4} alkyl), SO(C_{1-4} alkynyl), SO(C_{1-4} alkenyl), SO_2(C_{1-4} acyl), SO_2(C_{1-4} alkyl), SO_2(C_{1-4} alkynyl), SO_2(C_{1-4} alkenyl), O_3S(C_{1-4} acyl), O_3S(C_{1-4} alkyl), O_3S(C_{1-4} alkenyl), NH_2, NH(C_{1-4} alkyl), NH(C_{1-4} alkenyl), NH(C_{1-4} alkynyl), NH(C_{1-4} acyl), N(C_{1-4} alkyl)$_2$, N(C_{1-4} acyl)$_2$, OR^7; R^2 and $R^{2'}$ can be linked together to form a vinyl optionally substituted by one or two of N_3, CN, Cl, Br, F, I, NO_2;

R^6 is an optionally substituted alkyl (including lower alkyl), cyano (CN), CH_3, OCH_3, OCH_2CH_3, hydroxy methyl (CH_2OH), fluoromethyl (CH_2F), azido (N_3), CHCN, CH_2N_3, CH_2NH_2, CH_2NHCH_3, $CH_2N(CH_3)_2$, alkyne (optionally substituted), or fluoro;

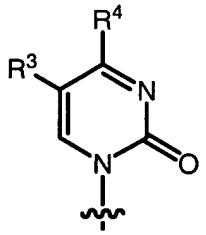
or its pharmaceutically acceptable salt or prodrug thereof, optionally in a pharmaceutically acceptable carrier.

47. The method of claim 46,

wherein Base is selected from the group consisting of:



(a)



(b)

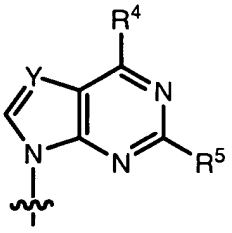
Y is N or CH.

R^3, R^4 and R^5 are independently H, halogen including F, Cl, Br, I, OH, OR', SH, SR', NH_2, NHR', NR'$_2$, lower alkyl of C_1-C_6, halogenated (F, Cl, Br, I) lower alkyl of C_1-C_6 such as CF_3 and CH_2CH_2F, lower alkenyl of C_2-C_6 such as $CH=CH_2$, halogenated (F, Cl, Br, I) lower alkenyl of C_2-C_6 such as CH=CHCl, CH=CHBr and CH=CHI, lower alkynyl of C_2-C_6 such as C≡CH, halogenated (F, Cl, Br, I) lower alkynyl of C_2-C_6, lower alkoxy of C_1-C_6 such as CH_2OH and CH_2CH_2OH, halogenated (F, Cl, Br, I) lower alkoxy of C_1-C_6, CO_2H, CO_2R', $CONH_2$, CONHR', CONR'$_2$, $CH=CHCO_2H$, $CH=CHCO_2R'$; and,

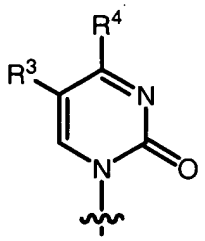
R' is an optionally substituted alkyl of C_1-C_{12} (particularly when the alkyl is an amino acid residue), cycloalkyl, optionally substituted alkynyl of C_2-C_6, optionally substituted lower alkenyl of C_2-C_6, or optionally substituted acyl.

48. The method of claim 46, wherein

Base is selected from the group consisting of (a) or (b):



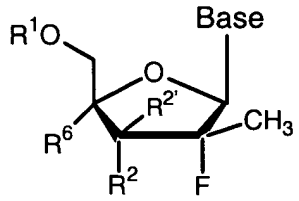
(a)



(b)

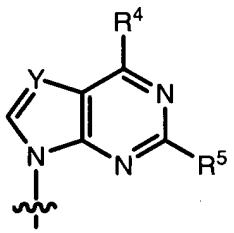
and wherein R^1 is H, R^2 is OH, $R^{2'}$ is H, R^3 is H, and R^4 is NH_2 or OH, and R^5 is NH_2.

49. A method for the treatment or prophylaxis of a rhinovirus infection comprising administering to a host an antivirally effective amount of a (2'*R*)-2'-deoxy-2'-fluoro-2'-*C*-methyl nucleoside (β-D or β-L) of the formula:

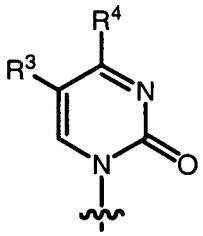


wherein

Base is selected from the group consisting of



(a)



(b)

Y is N or CH;

R^1 and R^7 are independently H, phosphate, including monophosphate, diphosphate, triphosphate, or a stabilized phosphate prodrug, H-phosphonate, including stabilized H-phosphonates, acyl, including optionally substituted phenyl and lower acyl, alkyl, including lower alkyl, O-substituted carboxyalkylamino or its peptide derivatives, sulfonate ester, including alkyl or arylalkyl sulfonyl, including methanesulfonyl and benzyl, wherein the phenyl group is optionally substituted, a lipid, including a phospholipid, an L or D-amino acid (or racemic mixture), a carbohydrate, a peptide, a cholesterol, or other pharmaceutically acceptable leaving group which when administered *in vivo* is capable of providing a compound wherein R^1 is H or phosphate;

R^2 is H or phosphate; R^1 and R^2 or R^7 can also be linked with cyclic phosphate group;

R^2 and $R^{2'}$ are independently H, C_{1-4} alkyl, C_{1-4} alkenyl, C_{1-4} alkynyl, vinyl, N_3, CN, Cl, Br, F, I, NO_2, $C(O)O(C_{1-4}$ alkyl), $C(O)O(C_{1-4}$ alkyl), $C(O)O(C_{1-4}$ alkynyl), $C(O)O(C_{1-4}$ alkenyl), $O(C_{1-4}$ acyl), $O(C_{1-4}$ alkyl), $O(C_{1-4}$ alkenyl), $S(C_{1-4}$ acyl), $S(C_{1-4}$ alkyl), $S(C_{1-4}$ alkynyl), $S(C_{1-4}$ alkenyl), $SO(C_{1-4}$ acyl), $SO(C_{1-4}$ alkyl), $SO(C_{1-4}$ alkynyl), $SO(C_{1-4}$ alkenyl), $SO_2(C_{1-4}$ acyl), $SO_2(C_{1-4}$ alkyl), $SO_2(C_{1-4}$ alkynyl), $SO_2(C_{1-4}$ alkenyl), $O_3S(C_{1-4}$ acyl), $O_3S(C_{1-4}$ alkyl), $O_3S(C_{1-4}$ alkenyl), NH_2, $NH(C_{1-4}$ alkyl), $NH(C_{1-4}$ alkenyl), $NH(C_{1-4}$ alkynyl), $NH(C_{1-4}$ acyl), $N(C_{1-4}$ alkyl)$_2$, $N(C_{1-18}$ acyl)$_2$, wherein alkyl, alkynyl, alkenyl and vinyl are optinally substituted by N_3, CN, one to three halogen (Cl, Br, F, I), NO_2, $C(O)O(C_{1-4}$ alkyl), $C(O)O(C_{1-4}$ alkyl), $C(O)O(C_{1-4}$ alkynyl), $C(O)O(C_{1-4}$ alkenyl), $O(C_{1-4}$ acyl), $O(C_{1-4}$ alkyl), $O(C_{1-4}$ alkenyl), $S(C_{1-4}$ acyl), $S(C_{1-4}$ alkyl), $S(C_{1-4}$ alkynyl), $S(C_{1-4}$ alkenyl), $SO(C_{1-4}$ acyl), $SO(C_{1-4}$ alkyl), $SO(C_{1-4}$ alkynyl), $SO(C_{1-4}$ alkenyl), $SO_2(C_{1-4}$ acyl), $SO_2(C_{1-4}$ alkyl), $SO_2(C_{1-4}$ alkynyl), $SO_2(C_{1-4}$ alkenyl), $O_3S(C_{1-4}$ acyl), $O_3S(C_{1-4}$ alkyl), $O_3S(C_{1-4}$ alkenyl), NH_2, $NH(C_{1-4}$ alkyl), $NH(C_{1-4}$ alkenyl), $NH(C_{1-4}$ alkynyl), $NH(C_{1-4}$ acyl), $N(C_{1-4}$ alkyl)$_2$, $N(C_{1-4}$ acyl)$_2$, OR^7; R^2 and $R^{2'}$ can be linked together to form a vinyl optionally substituted by one or two of N_3, CN, Cl, Br, F, I, NO_2;

R^3, R^4 and R^5 are independently H, halogen including F, Cl, Br, I, OH, OR', SH, SR', NH_2, NHR', NR'$_2$, lower alkyl of C_1-C_6, halogenated (F, Cl, Br, I) lower alkyl of C_1-C_6 such as CF_3 and CH_2CH_2F, lower alkenyl of C_2-C_6 such as $CH=CH_2$, halogenated (F, Cl, Br, I) lower alkenyl of C_2-C_6 such as CH=CHCl, CH=CHBr and CH=CHI, lower alkynyl of C_2-C_6 such as C≡CH, halogenated (F, Cl, Br, I) lower alkynyl of C_2-C_6, lower alkoxy of C_1-C_6 such as CH_2OH and CH_2CH_2OH, halogenated (F, Cl, Br, I) lower alkoxy of C_1-C_6, CO_2H, CO_2R', $CONH_2$, CONHR', CONR'$_2$, $CH=CHCO_2H$, $CH=CHCO_2R'$;

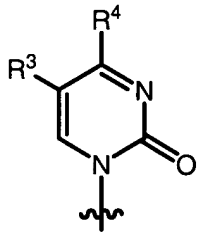
R' is an optionally substituted alkyl of C_1-C_{12} (particularly when the alkyl is an amino acid residue), cycloalkyl, optionally substituted alkynyl of C_2-C_6, optionally substituted lower alkenyl of C_2-C_6, or optionally substituted acyl;

R^6 is an optionally substituted alkyl (including lower alkyl), cyano (CN), CH_3, OCH_3, OCH_2CH_3, hydroxy methyl (CH_2OH), fluoromethyl (CH_2F), azido (N_3), CHCN, CH_2N_3, CH_2NH_2, CH_2NHCH_3, $CH_2N(CH_3)_2$, alkyne (optionally substituted), or fluoro;

or its pharmaceutically acceptable salt or prodrug thereof, optionally in a pharmaceutically acceptable carrier.

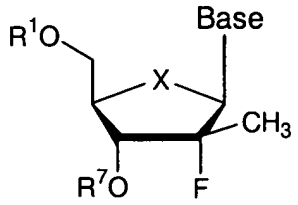
50. The method of claim 49, wherein

Base is



and R^1 is H, R^2 is OH, $R^{2'}$ is H, R^3 is H, R^4 is NH_2 or OH, and R^6 is H.

51. A method for the treatment or prophylaxis of a rhinovirus infection comprising administering to a host an antivirally effective amount of a (2'*R*)-2'-deoxy-2'-fluoro-2'-*C*-methyl nucleoside (β-D or β-L) or its pharmaceutically acceptable salt or prodrug thereof of the structure:



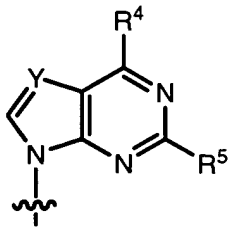
wherein Base is a purine or pyrimidine base;

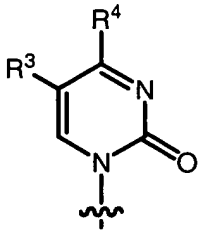
X is O, S, CH_2, Se, NH, N-alkyl, CHW (*R*, *S*, or racemic), $C(W)_2$, wherein W is F, Cl, Br, or I; and,

R^1 and R^7 are independently H, phosphate, including monophosphate, diphosphate, triphosphate, or a stabilized phosphate prodrug, H-phosphonate, including stabilized H-phosphonates, acyl, including optionally substituted phenyl and lower acyl, alkyl, including lower alkyl, O-substituted carboxyalkylamino or its peptide derivatives, sulfonate ester, including alkyl or arylalkyl sulfonyl, including methanesulfonyl and benzyl, wherein the phenyl group is optionally substituted, a lipid, including a phospholipid, an L or D-amino acid, a carbohydrate, a peptide, a cholesterol, or other pharmaceutically acceptable leaving group which when administered *in vivo* is capable of providing a compound wherein R^1 or R^7 is independently H or phosphate; R^1 and R^7 can also be linked with cyclic phosphate group and optionally a pharmaceutically acceptable carrier.

52. The method of claim 51, wherein

Base is selected from the group consisting of:





(a) (b)

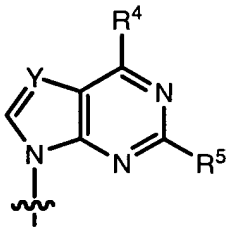
Y is N or CH;

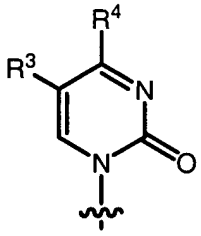
R^3, R^4 and R^5 are independently H, halogen including F, Cl, Br, I, OH, OR', SH, SR', NH_2, NHR', NR'_2, lower alkyl of C_1-C_6, halogenated (F, Cl, Br, I) lower alkyl of C_1-C_6 such as CF_3 and CH_2CH_2F, lower alkenyl of C_2-C_6 such as $CH=CH_2$, halogenated (F, Cl, Br, I) lower alkenyl of C_2-C_6 such as CH=CHCl, CH=CHBr and CH=CHI, lower alkynyl of C_2-C_6 such as C≡CH, halogenated (F, Cl, Br, I) lower alkynyl of C_2-C_6, lower alkoxy of C_1-C_6 such as CH_2OH and CH_2CH_2OH, halogenated (F, Cl, Br, I) lower alkoxy of C_1-C_6, CO_2H, CO_2R', $CONH_2$, CONHR', $CONR'_2$, $CH=CHCO_2H$, $CH=CHCO_2R'$; and,

R' is an optionally substituted alkyl of C_1-C_{12} (particularly when the alkyl is an amino acid residue), cycloalkyl, optionally substituted alkynyl of C_2-C_6, optionally substituted lower alkenyl of C_2-C_6, or optionally substituted acyl.

53. The method of claim 51, wherein

Base is selected from the group consisting of (a) or (b):

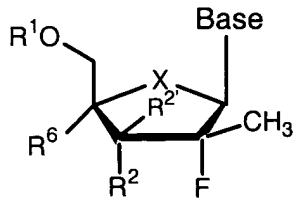




(a) (b)

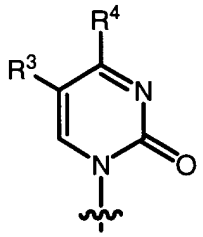
and wherein R^1 and R^7 are H, R^3 is H, and R^4 is NH_2 or OH, and R^5 is NH_2.

54. A method for the treatment or prophylaxis of a rhinovirus infection comprising administering to a host an antivirally effective amount of a (2'*R*)-2'-deoxy-2'-fluoro-2'-*C*-methyl nucleoside (β-D or β-L) of the formula:



wherein

Base is



X is O, S, CH_2, Se, NH, N-alkyl, CHW (*R*, *S*, or racemic), $C(W)_2$, wherein W is F, Cl, Br, or I;

R^1 and R^7 are independently H, phosphate, including monophosphate, diphosphate, triphosphate, or a stabilized phosphate prodrug, H-phosphonate, including stabilized H-phosphonates, acyl, including optionally substituted phenyl and lower acyl, alkyl, including lower alkyl, O-substituted carboxyalkylamino or its peptide derivatives, sulfonate ester, including alkyl or arylalkyl sulfonyl, including methanesulfonyl and benzyl, wherein the phenyl group is optionally substituted, a lipid, including a phospholipid, an L or D-amino acid (or racemic mixture), a carbohydrate, a peptide, a cholesterol, or other pharmaceutically acceptable leaving group which when administered *in vivo* is capable of providing a compound wherein R^1 is H or phosphate; R^2 is H or phosphate; R^1 and R^2 or R^7 can also be linked with cyclic phosphate group;

R^2 and $R^{2'}$ are independently H, C_{1-4} alkyl, C_{1-4} alkenyl, C_{1-4} alkynyl, vinyl, N_3, CN, Cl, Br, F, I, NO_2, $C(O)O(C_{1-4}$ alkyl), $C(O)O(C_{1-4}$ alkyl), $C(O)O(C_{1-4}$ alkynyl), $C(O)O(C_{1-4}$ alkenyl), $O(C_{1-4}$ acyl), $O(C_{1-4}$ alkyl), $O(C_{1-4}$ alkenyl), $S(C_{1-4}$ acyl), $S(C_{1-4}$ alkyl), $S(C_{1-4}$ alkynyl), $S(C_{1-4}$ alkenyl), $SO(C_{1-4}$ acyl), $SO(C_{1-4}$ alkyl), $SO(C_{1-4}$ alkynyl), $SO(C_{1-4}$ alkenyl), $SO_2(C_{1-4}$ acyl), $SO_2(C_{1-4}$ alkyl), $SO_2(C_{1-4}$ alkynyl), $SO_2(C_{1-4}$ alkenyl), $O_3S(C_{1-4}$ acyl), $O_3S(C_{1-4}$ alkyl), $O_3S(C_{1-4}$ alkenyl), NH_2, $NH(C_{1-4}$ alkyl), $NH(C_{1-4}$ alkenyl), $NH(C_{1-4}$ alkynyl), $NH(C_{1-4}$ acyl), $N(C_{1-4}$ alkyl)$_2$, $N(C_{1-18}$ acyl)$_2$, wherein alkyl, alkynyl, alkenyl and vinyl are optinally substituted by N_3, CN, one to three halogen (Cl, Br, F, I), NO_2, $C(O)O(C_{1-4}$ alkyl), $C(O)O(C_{1-4}$ alkyl), $C(O)O(C_{1-4}$ alkynyl), $C(O)O(C_{1-4}$ alkenyl), $O(C_{1-4}$ acyl), $O(C_{1-4}$ alkyl), $O(C_{1-4}$ alkenyl), $S(C_{1-4}$ acyl), $S(C_{1-4}$ alkyl), $S(C_{1-4}$ alkynyl), $S(C_{1-4}$ alkenyl), $SO(C_{1-4}$ acyl), $SO(C_{1-4}$ alkyl), $SO(C_{1-4}$ alkynyl), $SO(C_{1-4}$ alkenyl), $SO_2(C_{1-4}$ acyl), $SO_2(C_{1-4}$ alkyl), $SO_2(C_{1-4}$ alkynyl), $SO_2(C_{1-4}$ alkenyl), $O_3S(C_{1-4}$ acyl), $O_3S(C_{1-4}$ alkyl), $O_3S(C_{1-4}$ alkenyl), NH_2, $NH(C_{1-4}$ alkyl), $NH(C_{1-4}$ alkenyl), $NH(C_{1-4}$ alkynyl), $NH(C_{1-4}$ acyl), $N(C_{1-4}$ alkyl)$_2$, $N(C_{1-4}$ acyl)$_2$, OR^7; R^2 and $R^{2'}$ can be linked together to form a vinyl optionally substituted by one or two of N_3, CN, Cl, Br, F, I, NO_2;

R^3 and R^4 are independently H, halogen including F, Cl, Br, I, OH, OR', SH, SR', NH_2, NHR', NR'$_2$, lower alkyl of C_1-C_6, halogenated (F, Cl, Br, I) lower alkyl of C_1-C_6 such as CF_3 and CH_2CH_2F, lower alkenyl of C_2-C_6 such as $CH=CH_2$, halogenated (F, Cl, Br, I) lower alkenyl of C_2-C_6 such as CH=CHCl, CH=CHBr and CH=CHI, lower alkynyl of C_2-C_6 such as C≡CH, halogenated (F, Cl, Br, I) lower alkynyl of C_2-C_6, lower alkoxy of C_1-C_6 such as CH_2OH and CH_2CH_2OH, halogenated (F, Cl, Br, I) lower alkoxy of C_1-C_6, CO_2H, CO_2R', $CONH_2$, CONHR', CONR'$_2$, $CH=CHCO_2H$, $CH=CHCO_2R'$;

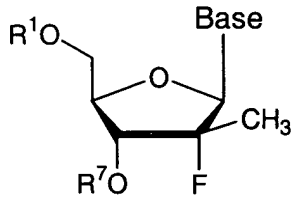
R' is an optionally substituted alkyl of C_1-C_{12} (particularly when the alkyl is an amino acid residue), cycloalkyl, optionally substituted alkynyl of C_2-

C_6, optionally substituted lower alkenyl of C_2-C_6, or optionally substituted acyl;

R^6 is an optionally substituted alkyl (including lower alkyl), cyano (CN), CH_3, OCH_3, OCH_2CH_3, hydroxy methyl (CH_2OH), fluoromethyl (CH_2F), azido (N_3), CHCN, CH_2N_3, CH_2NH_2, CH_2NHCH_3, $CH_2N(CH3)_2$, alkyne (optionally substituted), or fluoro;

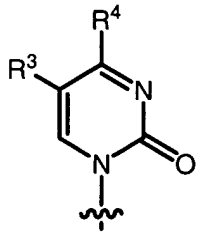
or its pharmaceutically acceptable salt or prodrug thereof, optionally in a pharmaceutically acceptable carrier.

55. A method for the treatment or prophylaxis of a rhinovirus infection comprising administering to a host an antivirally effective amount of a (2'*R*)-2'-deoxy-2'-fluoro-2'-*C*-methyl nucleoside (β-D or β-L) of the formula:



wherein

Base is



R^1 and R^7 are independently H, phosphate, including monophosphate, diphosphate, triphosphate, or a stabilized phosphate prodrug, H-phosphonate, including stabilized H-phosphonates, acyl, including

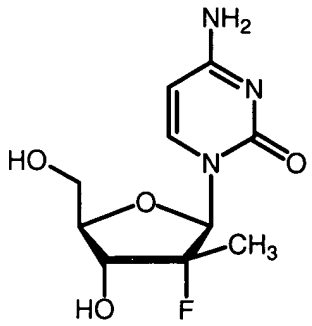
optionally substituted phenyl and lower acyl, alkyl, including lower alkyl, O-substituted carboxyalkylamino or its peptide derivatives, sulfonate ester, including alkyl or arylalkyl sulfonyl, including methanesulfonyl and benzyl, wherein the phenyl group is optionally substituted, a lipid, including a phospholipid, an L or D-amino acid, a carbohydrate, a peptide, a cholesterol, or other pharmaceutically acceptable leaving group which when administered *in vivo* is capable of providing a compound wherein R^1 or R^7 is independently H or phosphate; R^1 and R^7 can also be linked with cyclic phosphate group;

R^3 and R^4 are independently H, halogen including F, Cl, Br, I, OH, OR', SH, SR', NH_2, NHR', NR'$_2$, lower alkyl of C_1-C_6, halogenated (F, Cl, Br, I) lower alkyl of C_1-C_6 such as CF_3 and CH_2CH_2F, lower alkenyl of C_2-C_6 such as $CH=CH_2$, halogenated (F, Cl, Br, I) lower alkenyl of C_2-C_6 such as CH=CHCl, CH=CHBr and CH=CHI, lower alkynyl of C_2-C_6 such as C≡CH, halogenated (F, Cl, Br, I) lower alkynyl of C_2-C_6, lower alkoxy of C_1-C_6 such as CH_2OH and CH_2CH_2OH, halogenated (F, Cl, Br, I) lower alkoxy of C_1-C_6, CO_2H, CO_2R', $CONH_2$, CONHR', CONR'$_2$, $CH=CHCO_2H$, $CH=CHCO_2R'$;

R' is an optionally substituted alkyl of C_1-C_{12} (particularly when the alkyl is an amino acid residue), cycloalkyl, optionally substituted alkynyl of C_2-C_6, optionally substituted lower alkenyl of C_2-C_6, or optionally substituted acyl;

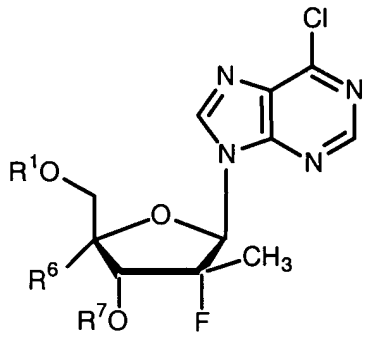
or its pharmaceutically acceptable salt or prodrug thereof, optionally in a pharmaceutically acceptable carrier.

56. A method for the treatment or prophylaxis of a rhinovirus infection comprising administering to a host an antivirally effective amount of a (2'*R*)-2'-deoxy-2'-fluoro-2'-*C*-methyl nucleoside (β-D) or its pharmaceutically acceptable salt or prodrug thereof of the formula:



optionally in a pharmaceutically acceptable carrier.

57. A method for the treatment or prophylaxis of a rhinovirus infection comprising administering to a host an antivirally effective amount of a (2'*R*)-2'-deoxy-2'-fluoro-2'-*C*-methyl nucleoside (β-D) or its pharmaceutically acceptable salt or prodrug thereof of the formula:



wherein

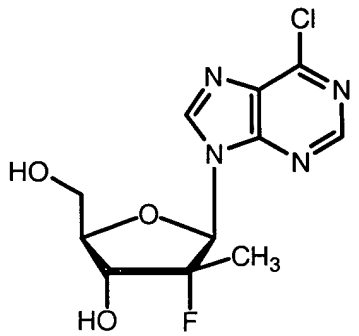
R^1 and R^7 are independently H, phosphate, including monophosphate, diphosphate, triphosphate, or a stabilized phosphate prodrug, H-phosphonate, including stabilized H-phosphonates, acyl, including optionally substituted phenyl and lower acyl, alkyl, including lower alkyl, O-substituted carboxyalkylamino or its peptide derivatives, sulfonate ester, including alkyl or arylalkyl sulfonyl, including methanesulfonyl and benzyl, wherein the phenyl group is optionally substituted, a lipid, including a phospholipid, an L or D-amino acid, a carbohydrate, a peptide, a cholesterol, or other pharmaceutically acceptable leaving group which when administered *in vivo* is capable of

providing a compound wherein R^1 or R^7 is independently H or phosphate; R^1 and R^7 can also be linked with cyclic phosphate group; and,

R^6 is an optionally substituted alkyl (including lower alkyl), cyano (CN), CH_3, OCH_3, OCH_2CH_3, hydroxy methyl (CH_2OH), fluoromethyl (CH_2F), azido (N_3), CHCN, CH_2N_3, CH_2NH_2, CH_2NHCH_3, $CH_2N(CH3)_2$, alkyne (optionally substituted), or fluoro; and

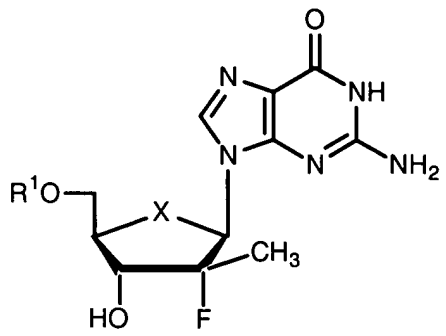
optionally in a pharmaceutically acceptable carrier.

58. A method for the treatment or prophylaxis of a rhinovirus infection comprising administering to a host an antivirally effective amount of a (2'*R*)-2'-deoxy-2'-fluoro-2'-*C*-methyl nucleoside (β-D) or its pharmaceutically acceptable salt or prodrug thereof of the formula:



optionally in a pharmaceutically acceptable carrier.

59. A method for the treatment or prophylaxis of a rhinovirus infection comprising administering to a host an antivirally effective amount of a (2'*R*)-2'-deoxy-2'-fluoro-2'-*C*-methyl nucleoside (β-D) or its pharmaceutically acceptable salt or prodrug thereof of the formula:



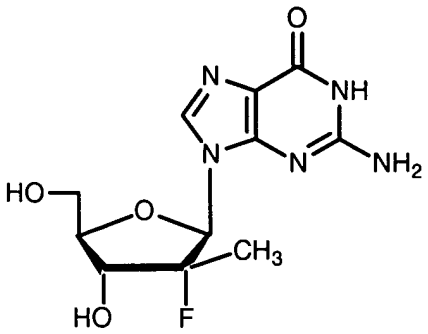
wherein

X is O, S, CH_2, Se, NH, N-alkyl, CHW (*R*, *S*, or racemic), $C(W)_2$, wherein W is F, Cl, Br, or I; and

R^1 is H, phosphate, including monophosphate, diphosphate, triphosphate, or a stabilized phosphate prodrug, H-phosphonate, including stabilized H-phosphonates, acyl, including optionally substituted phenyl and lower acyl, alkyl, including lower alkyl, O-substituted carboxyalkylamino or its peptide derivatives, sulfonate ester, including alkyl or arylalkyl sulfonyl, including methanesulfonyl and benzyl, wherein the phenyl group is optionally substituted, a lipid, including a phospholipid, an L or D-amino acid, a carbohydrate, a peptide, a cholesterol, or other pharmaceutically acceptable leaving group which when administered *in vivo* is capable of providing a compound wherein $R^1$is H or phosphate;

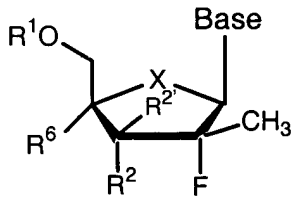
optionally in a pharmaceutically acceptable carrier.

60. A method for the treatment or prophylaxis of a rhinovirus infection comprising administering to a host an antivirally effective amount of a (2'*R*)-2'-deoxy-2'-fluoro-2'-*C*-methyl nucleoside (β-D) or its pharmaceutically acceptable salt or prodrug thereof of the formula:



optionally in a pharmaceutically acceptable carrier.

61. A method for the treatment or prophylaxis of a yellow fever virus infection comprising administering to a host an antivirally effective amount of a (2'*R*)-2'-deoxy-2'-fluoro-2'-*C*-methyl nucleoside (β-D or β-L) of the formula:



wherein

Base is a purine or pyrimidine base;

X is O, S, CH_2, Se, NH, N-alkyl, CHW (*R*, *S*, or racemic), $C(W)_2$, wherein W is F, Cl, Br, or I;

R^1 and R^7 are independently H, phosphate, including monophosphate, diphosphate, triphosphate, or a stabilized phosphate prodrug, H-phosphonate, including stabilized H-phosphonates, acyl, including optionally substituted phenyl and lower acyl, alkyl, including lower alkyl, O-substituted carboxyalkylamino or its peptide derivatives, sulfonate ester, including alkyl or arylalkyl sulfonyl, including methanesulfonyl and benzyl, wherein the phenyl group is optionally substituted, a lipid, including a phospholipid, an L or D-amino acid (or racemic mixture), a carbohydrate, a peptide, a cholesterol, or other

pharmaceutically acceptable leaving group which when administered *in vivo* is capable of providing a compound wherein R^1 is H or phosphate; R^2 is H or phosphate; R^1 and R^2 or R^7 can also be linked with cyclic phosphate group;

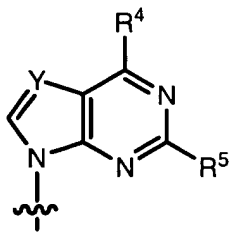
R^2 and $R^{2'}$ are independently H, C_{1-4} alkyl, C_{1-4} alkenyl, C_{1-4} alkynyl, vinyl, N_3, CN, Cl, Br, F, I, NO_2, $C(O)O(C_{1-4}$ alkyl), $C(O)O(C_{1-4}$ alkyl), $C(O)O(C_{1-4}$ alkynyl), $C(O)O(C_{1-4}$ alkenyl), $O(C_{1-4}$ acyl), $O(C_{1-4}$ alkyl), $O(C_{1-4}$ alkenyl), $S(C_{1-4}$ acyl), $S(C_{1-4}$ alkyl), $S(C_{1-4}$ alkynyl), $S(C_{1-4}$ alkenyl), $SO(C_{1-4}$ acyl), $SO(C_{1-4}$ alkyl), $SO(C_{1-4}$ alkynyl), $SO(C_{1-4}$ alkenyl), $SO_2(C_{1-4}$ acyl), $SO_2(C_{1-4}$ alkyl), $SO_2(C_{1-4}$ alkynyl), $SO_2(C_{1-4}$ alkenyl), $O_3S(C_{1-4}$ acyl), $O_3S(C_{1-4}$ alkyl), $O_3S(C_{1-4}$ alkenyl), NH_2, $NH(C_{1-4}$ alkyl), $NH(C_{1-4}$ alkenyl), $NH(C_{1-4}$ alkynyl), $NH(C_{1-4}$ acyl), $N(C_{1-4}$ alkyl)$_2$, $N(C_{1-18}$ acyl)$_2$, wherein alkyl, alkynyl, alkenyl and vinyl are optinally substituted by N_3, CN, one to three halogen (Cl, Br, F, I), NO_2, $C(O)O(C_{1-4}$ alkyl), $C(O)O(C_{1-4}$ alkyl), $C(O)O(C_{1-4}$ alkynyl), $C(O)O(C_{1-4}$ alkenyl), $O(C_{1-4}$ acyl), $O(C_{1-4}$ alkyl), $O(C_{1-4}$ alkenyl), $S(C_{1-4}$ acyl), $S(C_{1-4}$ alkyl), $S(C_{1-4}$ alkynyl), $S(C_{1-4}$ alkenyl), $SO(C_{1-4}$ acyl), $SO(C_{1-4}$ alkyl), $SO(C_{1-4}$ alkynyl), $SO(C_{1-4}$ alkenyl), $SO_2(C_{1-4}$ acyl), $SO_2(C_{1-4}$ alkyl), $SO_2(C_{1-4}$ alkynyl), $SO_2(C_{1-4}$ alkenyl), $O_3S(C_{1-4}$ acyl), $O_3S(C_{1-4}$ alkyl), $O_3S(C_{1-4}$ alkenyl), NH_2, $NH(C_{1-4}$ alkyl), $NH(C_{1-4}$ alkenyl), $NH(C_{1-4}$ alkynyl), $NH(C_{1-4}$ acyl), $N(C_{1-4}$ alkyl)$_2$, $N(C_{1-4}$ acyl)$_2$, OR^7; R^2 and $R^{2'}$ can be linked together to form a vinyl optionally substituted by one or two of N_3, CN, Cl, Br, F, I, NO_2;

R^6 is an optionally substituted alkyl (including lower alkyl), cyano (CN), CH_3, OCH_3, OCH_2CH_3, hydroxy methyl (CH_2OH), fluoromethyl (CH_2F), azido (N_3), CHCN, CH_2N_3, CH_2NH_2, CH_2NHCH_3, $CH_2N(CH_3)_2$, alkyne (optionally substituted), or fluoro;

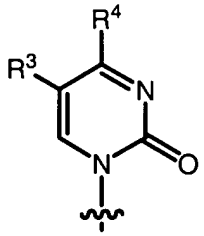
or its pharmaceutically acceptable salt or prodrug thereof, optionally in a pharmaceutically acceptable carrier.

62. The method of claim 61,

wherein Base is selected from the group consisting of:



(a)



(b)

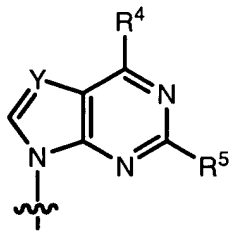
Y is N or CH.

R^3, R^4 and R^5 are independently H, halogen including F, Cl, Br, I, OH, OR', SH, SR', NH_2, NHR', NR'$_2$, lower alkyl of C_1-C_6, halogenated (F, Cl, Br, I) lower alkyl of C_1-C_6 such as CF_3 and CH_2CH_2F, lower alkenyl of C_2-C_6 such as $CH=CH_2$, halogenated (F, Cl, Br, I) lower alkenyl of C_2-C_6 such as CH=CHCl, CH=CHBr and CH=CHI, lower alkynyl of C_2-C_6 such as C≡CH, halogenated (F, Cl, Br, I) lower alkynyl of C_2-C_6, lower alkoxy of C_1-C_6 such as CH_2OH and CH_2CH_2OH, halogenated (F, Cl, Br, I) lower alkoxy of C_1-C_6, CO_2H, CO_2R', $CONH_2$, CONHR', CONR'$_2$, $CH=CHCO_2H$, $CH=CHCO_2R'$; and,

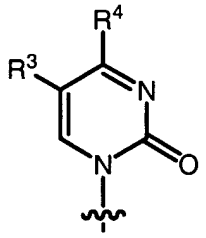
R' is an optionally substituted alkyl of C_1-C_{12} (particularly when the alkyl is an amino acid residue), cycloalkyl, optionally substituted alkynyl of C_2-C_6, optionally substituted lower alkenyl of C_2-C_6, or optionally substituted acyl.

63. The method of claim 61, wherein

Base is selected from the group consisting of (a) or (b):



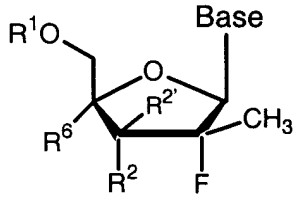
(a)



(b)

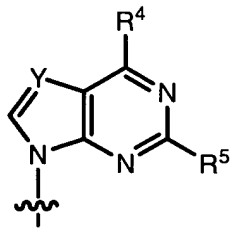
and wherein R^1 is H, R^2 is OH, $R^{2'}$ is H, R^3 is H, and R^4 is NH_2 or OH, and R^5 is NH_2.

64. A method for the treatment or prophylaxis of a yellow fever virus infection comprising administering to a host an antivirally effective amount of a (2'*R*)-2'-deoxy-2'-fluoro-2'-*C*-methyl nucleoside (β-D or β-L) of the formula:

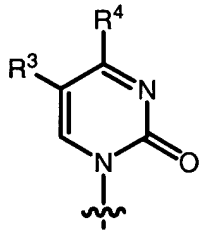


wherein

Base is selected from the group consisting of



(a)



(b)

Y is N or CH;

R^1 and R^7 are independently H, phosphate, including monophosphate, diphosphate, triphosphate, or a stabilized phosphate prodrug, H-phosphonate, including stabilized H-phosphonates, acyl, including optionally substituted phenyl and lower acyl, alkyl, including lower alkyl, O-substituted carboxyalkylamino or its peptide derivatives, sulfonate ester, including alkyl or arylalkyl sulfonyl, including methanesulfonyl and benzyl, wherein the phenyl group is optionally substituted, a lipid, including a phospholipid, an L or D-amino acid (or racemic mixture), a carbohydrate, a peptide, a cholesterol, or other pharmaceutically acceptable leaving group which when administered *in vivo* is capable of providing a compound wherein R^1 is H or phosphate; R^2 is H or phosphate; R^1 and R^2 or R^7 can also be linked with cyclic phosphate group;

R^2 and $R^{2'}$ are independently H, C_{1-4} alkyl, C_{1-4} alkenyl, C_{1-4} alkynyl, vinyl, N_3, CN, Cl, Br, F, I, NO_2, $C(O)O(C_{1-4}$ alkyl), $C(O)O(C_{1-4}$ alkyl), $C(O)O(C_{1-4}$ alkynyl), $C(O)O(C_{1-4}$ alkenyl), $O(C_{1-4}$ acyl), $O(C_{1-4}$ alkyl), $O(C_{1-4}$ alkenyl), $S(C_{1-4}$ acyl), $S(C_{1-4}$ alkyl), $S(C_{1-4}$ alkynyl), $S(C_{1-4}$ alkenyl), $SO(C_{1-4}$ acyl), $SO(C_{1-4}$ alkyl), $SO(C_{1-4}$ alkynyl), $SO(C_{1-4}$ alkenyl), $SO_2(C_{1-4}$ acyl), $SO_2(C_{1-4}$ alkyl), $SO_2(C_{1-4}$ alkynyl), $SO_2(C_{1-4}$ alkenyl), $O_3S(C_{1-4}$ acyl), $O_3S(C_{1-4}$ alkyl), $O_3S(C_{1-4}$ alkenyl), NH_2, $NH(C_{1-4}$ alkyl), $NH(C_{1-4}$ alkenyl), $NH(C_{1-4}$ alkynyl), $NH(C_{1-4}$ acyl), $N(C_{1-4}$ alkyl)$_2$, $N(C_{1-18}$ acyl)$_2$, wherein alkyl, alkynyl, alkenyl and vinyl are optinally substituted by N_3, CN, one to three halogen (Cl, Br, F, I), NO_2, $C(O)O(C_{1-4}$ alkyl), $C(O)O(C_{1-4}$ alkyl), $C(O)O(C_{1-4}$ alkynyl), $C(O)O(C_{1-4}$ alkenyl), $O(C_{1-4}$ acyl), $O(C_{1-4}$ alkyl), $O(C_{1-4}$ alkenyl), $S(C_{1-4}$ acyl), $S(C_{1-4}$ alkyl), $S(C_{1-4}$ alkynyl), $S(C_{1-4}$ alkenyl), $SO(C_{1-4}$ acyl), $SO(C_{1-4}$ alkyl), $SO(C_{1-4}$ alkynyl), $SO(C_{1-4}$ alkenyl), $SO_2(C_{1-4}$ acyl), $SO_2(C_{1-4}$ alkyl), $SO_2(C_{1-4}$ alkynyl), $SO_2(C_{1-4}$ alkenyl), $O_3S(C_{1-4}$ acyl), $O_3S(C_{1-4}$ alkyl), $O_3S(C_{1-4}$ alkenyl), NH_2, $NH(C_{1-4}$ alkyl), $NH(C_{1-4}$

alkenyl), NH(C_{1-4} alkynyl), NH(C_{1-4} acyl), N(C_{1-4} alkyl)$_2$, N(C_{1-4} acyl)$_2$, OR^7; R^2 and $R^{2'}$ can be linked together to form a vinyl optionally substituted by one or two of N_3, CN, Cl, Br, F, I, NO_2;

R^3, R^4 and R^5 are independently H, halogen including F, Cl, Br, I, OH, OR', SH, SR', NH_2, NHR', NR'$_2$, lower alkyl of C_1-C_6, halogenated (F, Cl, Br, I) lower alkyl of C_1-C_6 such as CF_3 and CH_2CH_2F, lower alkenyl of C_2-C_6 such as $CH=CH_2$, halogenated (F, Cl, Br, I) lower alkenyl of C_2-C_6 such as CH=CHCl, CH=CHBr and CH=CHI, lower alkynyl of C_2-C_6 such as C≡CH, halogenated (F, Cl, Br, I) lower alkynyl of C_2-C_6, lower alkoxy of C_1-C_6 such as CH_2OH and CH_2CH_2OH, halogenated (F, Cl, Br, I) lower alkoxy of C_1-C_6, CO_2H, CO_2R', $CONH_2$, CONHR', CONR'$_2$, $CH=CHCO_2H$, $CH=CHCO_2R'$;

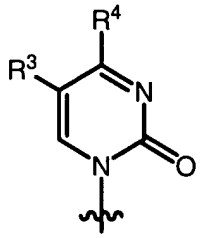
R' is an optionally substituted alkyl of C_1-C_{12} (particularly when the alkyl is an amino acid residue), cycloalkyl, optionally substituted alkynyl of C_2-C_6, optionally substituted lower alkenyl of C_2-C_6, or optionally substituted acyl;

R^6 is an optionally substituted alkyl (including lower alkyl), cyano (CN), CH_3, OCH_3, OCH_2CH_3, hydroxy methyl (CH_2OH), fluoromethyl (CH_2F), azido (N_3), CHCN, CH_2N_3, CH_2NH_2, CH_2NHCH_3, $CH_2N(CH_3)_2$, alkyne (optionally substituted), or fluoro;

or its pharmaceutically acceptable salt or prodrug thereof. optionally in a pharmaceutically acceptable carrier.

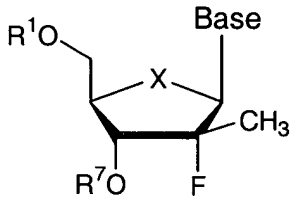
65. The method of claim 64, wherein

Base is



and R^1 is H, R^2 is OH, $R^{2'}$ is H, R^3 is H, R^4 is NH_2 or OH, and R^6 is H.

66. A method for the treatment or prophylaxis of a yellow fever virus infection comprising administering to a host an antivirally effective amount of a (2'*R*)-2'-deoxy-2'-fluoro-2'-*C*-methyl nucleoside (β-D or β-L) or its pharmaceutically acceptable salt or prodrug thereof of the structure:



wherein Base is a purine or pyrimidine base;

X is O, S, CH_2, Se, NH, N-alkyl, CHW (*R*, *S*, or racemic), $C(W)_2$, wherein W is F, Cl, Br, or I; and,

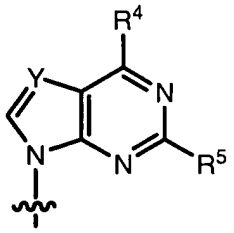
R^1 and R^7 are independently H, phosphate, including monophosphate, diphosphate, triphosphate, or a stabilized phosphate prodrug, H-phosphonate, including stabilized H-phosphonates, acyl, including optionally substituted phenyl and lower acyl, alkyl, including lower alkyl, O-substituted carboxyalkylamino or its peptide derivatives, sulfonate ester, including alkyl or arylalkyl sulfonyl, including methanesulfonyl and benzyl, wherein the phenyl group is optionally substituted, a lipid, including a phospholipid, an L or D-amino acid, a

carbohydrate, a peptide, a cholesterol, or other pharmaceutically acceptable leaving group which when administered *in vivo* is capable of providing a compound wherein R^1 or R^7 is independently H or phosphate; R^1 and R^7 can also be linked with cyclic phosphate group and

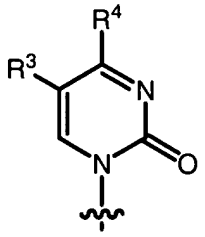
optionally in a pharmaceutically acceptable carrier.

67. The method of claim 66, wherein

Base is selected from the group consisting of:



(a)



(b)

Y is N or CH;

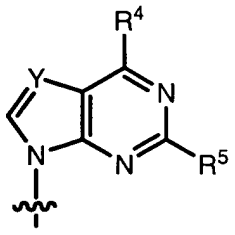
R^3, R^4 and R^5 are independently H, halogen including F, Cl, Br, I, OH, OR', SH, SR', NH_2, NHR', NR'_2, lower alkyl of C_1-C_6, halogenated (F, Cl, Br, I) lower alkyl of C_1-C_6 such as CF_3 and CH_2CH_2F, lower alkenyl of C_2-C_6 such as $CH=CH_2$, halogenated (F, Cl, Br, I) lower alkenyl of C_2-C_6 such as CH=CHCl, CH=CHBr and CH=CHI, lower alkynyl of C_2-C_6 such as C≡CH, halogenated (F, Cl, Br, I) lower alkynyl of C_2-C_6, lower alkoxy of C_1-C_6 such as CH_2OH and CH_2CH_2OH, halogenated (F, Cl, Br, I) lower alkoxy of C_1-C_6, CO_2H, CO_2R', $CONH_2$, CONHR', $CONR'_2$, $CH=CHCO_2H$, $CH=CHCO_2R'$; and,

R' is an optionally substituted alkyl of C_1-C_{12} (particularly when the alkyl is an amino acid residue), cycloalkyl, optionally substituted alkynyl of C_2-

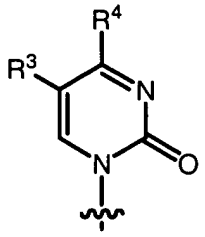
C_6, optionally substituted lower alkenyl of C_2-C_6, or optionally substituted acyl.

68. The method of claim 66, wherein

Base is selected from the group consisting of (a) or (b):



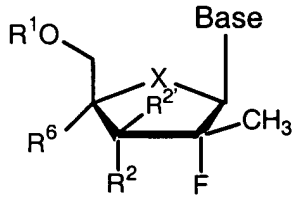
(a)



(b)

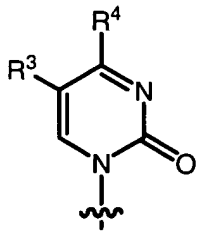
and wherein R^1 and R^7 are H, R^3 is H, and R^4 is NH_2 or OH, and R^5 is NH_2.

69. A method for the treatment or prophylaxis of a yellow fever virus infection comprising administering to a host an antivirally effective amount of a (2'*R*)-2'-deoxy-2'-fluoro-2'-*C*-methyl nucleoside (β-D or β-L) of the formula:



wherein

Base is



X is O, S, CH_2, Se, NH, N-alkyl, CHW (*R*, *S*, or racemic), $C(W)_2$, wherein W is F, Cl, Br, or I;

R^1 and R^7 are independently H, phosphate, including monophosphate, diphosphate, triphosphate, or a stabilized phosphate prodrug, H-phosphonate, including stabilized H-phosphonates, acyl, including optionally substituted phenyl and lower acyl, alkyl, including lower alkyl, O-substituted carboxyalkylamino or its peptide derivatives, sulfonate ester, including alkyl or arylalkyl sulfonyl, including methanesulfonyl and benzyl, wherein the phenyl group is optionally substituted, a lipid, including a phospholipid, an L or D-amino acid (or racemic mixture), a carbohydrate, a peptide, a cholesterol, or other pharmaceutically acceptable leaving group which when administered *in vivo* is capable of providing a compound wherein R^1 is H or phosphate; R^2 is H or phosphate; R^1 and R^2 or R^7 can also be linked with cyclic phosphate group;

R^2 and $R^{2'}$ are independently H, C_{1-4} alkyl, C_{1-4} alkenyl, C_{1-4} alkynyl, vinyl, N_3, CN, Cl, Br, F, I, NO_2, $C(O)O(C_{1-4}$ alkyl), $C(O)O(C_{1-4}$ alkyl), $C(O)O(C_{1-4}$ alkynyl), $C(O)O(C_{1-4}$ alkenyl), $O(C_{1-4}$ acyl), $O(C_{1-4}$ alkyl), $O(C_{1-4}$ alkenyl), $S(C_{1-4}$ acyl), $S(C_{1-4}$ alkyl), $S(C_{1-4}$ alkynyl), $S(C_{1-4}$ alkenyl), $SO(C_{1-4}$ acyl), $SO(C_{1-4}$ alkyl), $SO(C_{1-4}$ alkynyl), $SO(C_{1-4}$ alkenyl), $SO_2(C_{1-4}$ acyl), $SO_2(C_{1-4}$ alkyl), $SO_2(C_{1-4}$ alkynyl), $SO_2(C_{1-4}$ alkenyl), $O_3S(C_{1-4}$ acyl), $O_3S(C_{1-4}$ alkyl), $O_3S(C_{1-4}$ alkenyl), NH_2, $NH(C_{1-4}$ alkyl), $NH(C_{1-4}$ alkenyl), $NH(C_{1-4}$ alkynyl), $NH(C_{1-4}$ acyl), $N(C_{1-4}$ alkyl)$_2$, $N(C_{1-18}$ acyl)$_2$, wherein alkyl, alkynyl, alkenyl and vinyl are optinally substituted by N_3, CN, one to three halogen (Cl, Br, F, I), NO_2, $C(O)O(C_{1-4}$ alkyl), $C(O)O(C_{1-4}$ alkyl), $C(O)O(C_{1-4}$ alkynyl), $C(O)O(C_{1-4}$ alkenyl), $O(C_{1-4}$ acyl), $O(C_{1-4}$ alkyl), $O(C_{1-4}$ alkenyl), $S(C_{1-4}$ acyl), $S(C_{1-4}$ alkyl), $S(C_{1-4}$ alkynyl), $S(C_{1-4}$ alkenyl), $SO(C_{1-4}$ acyl), $SO(C_{1-4}$ alkyl), $SO(C_{1-4}$ alkynyl), $SO(C_{1-4}$ alkenyl), $SO_2(C_{1-4}$ acyl), $SO_2(C_{1-4}$ alkyl), $SO_2(C_{1-4}$ alkynyl), $SO_2(C_{1-4}$ alkenyl), $O_3S(C_{1-4}$ acyl),

$O_3S(C_{1-4}$ alkyl), $O_3S(C_{1-4}$ alkenyl), NH_2, $NH(C_{1-4}$ alkyl), $NH(C_{1-4}$ alkenyl), $NH(C_{1-4}$ alkynyl), $NH(C_{1-4}$ acyl), $N(C_{1-4}$ alkyl)$_2$, $N(C_{1-4}$ acyl)$_2$, OR^7; R^2 and $R^{2'}$ can be linked together to form a vinyl optionally substituted by one or two of N_3, CN, Cl, Br, F, I, NO_2;

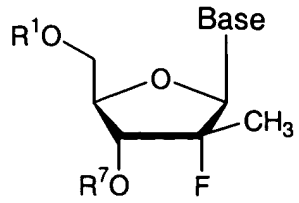
R^3 and R^4 are independently H, halogen including F, Cl, Br, I, OH, OR', SH, SR', NH_2, NHR', NR'$_2$, lower alkyl of C_1-C_6, halogenated (F, Cl, Br, I) lower alkyl of C_1-C_6 such as CF_3 and CH_2CH_2F, lower alkenyl of C_2-C_6 such as $CH=CH_2$, halogenated (F, Cl, Br, I) lower alkenyl of C_2-C_6 such as CH=CHCl, CH=CHBr and CH=CHI, lower alkynyl of C_2-C_6 such as C≡CH, halogenated (F, Cl, Br, I) lower alkynyl of C_2-C_6, lower alkoxy of C_1-C_6 such as CH_2OH and CH_2CH_2OH, halogenated (F, Cl, Br, I) lower alkoxy of C_1-C_6, CO_2H, CO_2R', $CONH_2$, CONHR', CONR'$_2$, $CH=CHCO_2H$, $CH=CHCO_2R'$;

R' is an optionally substituted alkyl of C_1-C_{12} (particularly when the alkyl is an amino acid residue), cycloalkyl, optionally substituted alkynyl of C_2-C_6, optionally substituted lower alkenyl of C_2-C_6, or optionally substituted acyl.

R^6 is an optionally substituted alkyl (including lower alkyl), cyano (CN), CH_3, OCH_3, OCH_2CH_3, hydroxy methyl (CH_2OH), fluoromethyl (CH_2F), azido (N_3), CHCN, CH_2N_3, CH_2NH_2, CH_2NHCH_3, $CH_2N(CH_3)_2$, alkyne (optionally substituted), or fluoro;

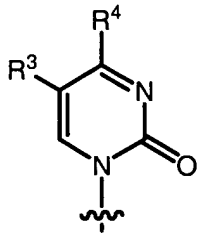
or its pharmaceutically acceptable salt or prodrug thereof, optionally in a pharmaceutically acceptable carrier.

70. A method for the treatment or prophylaxis of a yellow fever virus infection comprising administering to a host an antivirally effective amount of a (2'*R*)-2'-deoxy-2'-fluoro-2'-*C*-methyl nucleoside (β-D or β-L) of the formula:



wherein

Base is



R^1 and R^7 are independently H, phosphate, including monophosphate, diphosphate, triphosphate, or a stabilized phosphate prodrug, H-phosphonate, including stabilized H-phosphonates, acyl, including optionally substituted phenyl and lower acyl, alkyl, including lower alkyl, O-substituted carboxyalkylamino or its peptide derivatives, sulfonate ester, including alkyl or arylalkyl sulfonyl, including methanesulfonyl and benzyl, wherein the phenyl group is optionally substituted, a lipid, including a phospholipid, an L or D-amino acid, a carbohydrate, a peptide, a cholesterol, or other pharmaceutically acceptable leaving group which when administered *in vivo* is capable of providing a compound wherein R^1 or R^7 is independently H or phosphate; R^1 and R^7 can also be linked with cyclic phosphate group;

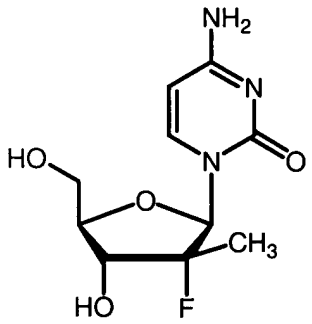
R^3 and R^4 are independently H, halogen including F, Cl, Br, I, OH, OR', SH, SR', NH_2, NHR', NR'$_2$, lower alkyl of C_1-C_6, halogenated (F, Cl, Br, I) lower alkyl of C_1-C_6 such as CF_3 and CH_2CH_2F, lower alkenyl of C_2-C_6 such as $CH=CH_2$, halogenated (F, Cl, Br, I) lower alkenyl of C_2-C_6 such as CH=CHCl, CH=CHBr and CH=CHI, lower alkynyl of C_2-C_6

such as C≡CH, halogenated (F, Cl, Br, I) lower alkynyl of C_2-C_6, lower alkoxy of C_1-C_6 such as CH_2OH and CH_2CH_2OH, halogenated (F, Cl, Br, I) lower alkoxy of C_1-C_6, CO_2H, CO_2R', $CONH_2$, $CONHR'$, $CONR'_2$, $CH=CHCO_2H$, $CH=CHCO_2R'$;

R' is an optionally substituted alkyl of C_1-C_{12} (particularly when the alkyl is an amino acid residue), cycloalkyl, optionally substituted alkynyl of C_2-C_6, optionally substituted lower alkenyl of C_2-C_6, or optionally substituted acyl;

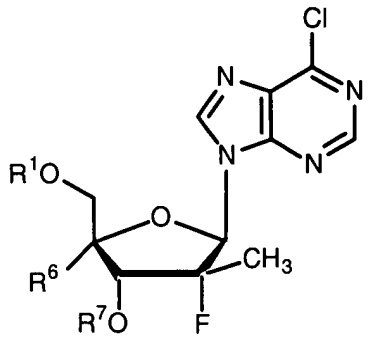
or its pharmaceutically acceptable salt or prodrug thereof, optionally in a pharmaceutically acceptable carrier.

71. A method for the treatment or prophylaxis of a yellow fever virus infection comprising administering to a host an antivirally effective amount of a (2'*R*)-2'-deoxy-2'-fluoro-2'-*C*-methyl nucleoside (β-D) or its pharmaceutically acceptable salt or prodrug thereof of the formula:



optionally in a pharmaceutically acceptable carrier.

72. A method for the treatment or prophylaxis of a yellow fever virus infection comprising administering to a host an antivirally effective amount of a (2'*R*)-2'-deoxy-2'-fluoro-2'-*C*-methyl nucleoside (β-D) or its pharmaceutically acceptable salt or prodrug thereof of the formula:



wherein

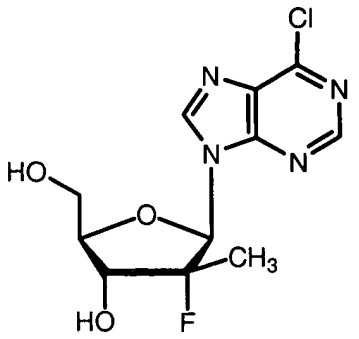
R^1 and R^7 are independently H, phosphate, including monophosphate, diphosphate, triphosphate, or a stabilized phosphate prodrug, H-phosphonate, including stabilized H-phosphonates, acyl, including optionally substituted phenyl and lower acyl, alkyl, including lower alkyl, O-substituted carboxyalkylamino or its peptide derivatives, sulfonate ester, including alkyl or arylalkyl sulfonyl, including methanesulfonyl and benzyl, wherein the phenyl group is optionally substituted, a lipid, including a phospholipid, an L or D-amino acid, a carbohydrate, a peptide, a cholesterol, or other pharmaceutically acceptable leaving group which when administered *in vivo* is capable of providing a compound wherein R^1 or R^7 is independently H or phosphate; R^1 and R^7 can also be linked with cyclic phosphate group; and,

R^6 is an optionally substituted alkyl (including lower alkyl), cyano (CN), CH_3, OCH_3, OCH_2CH_3, hydroxy methyl (CH_2OH), fluoromethyl (CH_2F), azido (N_3), CHCN, CH_2N_3, CH_2NH_2, CH_2NHCH_3, $CH_2N(CH_3)_2$, alkyne (optionally substituted), or fluoro, and

optionally in a pharmaceutically acceptable carrier.

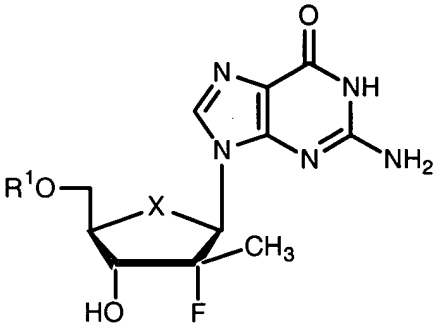
73. A method for the treatment or prophylaxis of a yellow fever virus infection comprising administering to a host an antivirally effective amount of a (2'*R*)-2'-deoxy-2'-

fluoro-2'-*C*-methyl nucleoside (β-D) or its pharmaceutically acceptable salt or prodrug thereof of the formula:



optionally in a pharmaceutically acceptable carrier.

74. A method for the treatment or prophylaxis of a yellow fever virus infection comprising administering to a host an antivirally effective amount of a (2'*R*)-2'-deoxy-2'-fluoro-2'-*C*-methyl nucleoside (β-D) or its pharmaceutically acceptable salt or prodrug thereof of the formula:



wherein

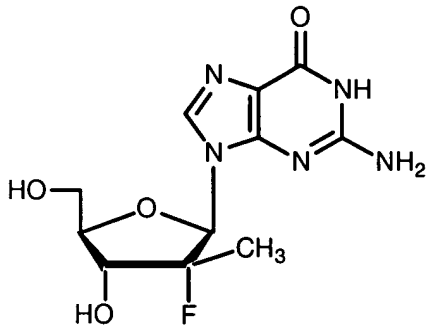
X is O, S, CH_2, Se, NH, N-alkyl, CHW (*R*, *S*, or racemic), $C(W)_2$, wherein W is F, Cl, Br, or I; and

R^1 is H, phosphate, including monophosphate, diphosphate, triphosphate, or a stabilized phosphate prodrug, H-phosphonate, including stabilized H-phosphonates, acyl, including optionally substituted phenyl and lower acyl, alkyl, including lower alkyl, O-substituted carboxyalkylamino or its peptide derivatives, sulfonate ester, including alkyl or arylalkyl

sulfonyl, including methanesulfonyl and benzyl, wherein the phenyl group is optionally substituted, a lipid, including a phospholipid, an L or D-amino acid, a carbohydrate, a peptide, a cholesterol, or other pharmaceutically acceptable leaving group which when administered *in vivo* is capable of providing a compound wherein R^1 is H or phosphate;

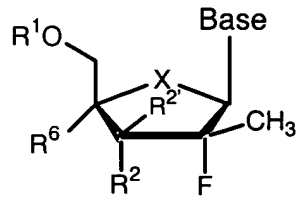
optionally in a pharmaceutically acceptable carrier

75. A method for the treatment or prophylaxis of a yellow fever virus infection comprising administering to a host an antivirally effective amount of a (2'*R*)-2'-deoxy-2'-fluoro-2'-*C*-methyl nucleoside (β-D) or its pharmaceutically acceptable salt or prodrug thereof of the formula:



optionally in a pharmaceutically acceptable carrier.

76. A method for the treatment or prophylaxis of a West Nile virus infection comprising administering to a host an antivirally effective amount of a (2'*R*)-2'-deoxy-2'-fluoro-2'-*C*-methyl nucleoside (β-D or β-L) of the formula:



wherein

Base is a purine or pyrimidine base;

X is O, S, CH_2, Se, NH, N-alkyl, CHW (*R*, *S*, or racemic), $C(W)_2$, wherein W is F, Cl, Br, or I;

R^1 and R^7 are independently H, phosphate, including monophosphate, diphosphate, triphosphate, or a stabilized phosphate prodrug, H-phosphonate, including stabilized H-phosphonates, acyl, including optionally substituted phenyl and lower acyl, alkyl, including lower alkyl, O-substituted carboxyalkylamino or its peptide derivatives, sulfonate ester, including alkyl or arylalkyl sulfonyl, including methanesulfonyl and benzyl, wherein the phenyl group is optionally substituted, a lipid, including a phospholipid, an L or D-amino acid (or racemic mixture), a carbohydrate, a peptide, a cholesterol, or other pharmaceutically acceptable leaving group which when administered *in vivo* is capable of providing a compound wherein R^1 is H or phosphate; R^2 is H or phosphate; R^1 and R^2 or R^7 can also be linked with cyclic phosphate group;

R^2 and $R^{2'}$ are independently H, C_{1-4} alkyl, C_{1-4} alkenyl, C_{1-4} alkynyl, vinyl, N_3, CN, Cl, Br, F, I, NO_2, $C(O)O(C_{1-4}$ alkyl), $C(O)O(C_{1-4}$ alkyl), $C(O)O(C_{1-4}$ alkynyl), $C(O)O(C_{1-4}$ alkenyl), $O(C_{1-4}$ acyl), $O(C_{1-4}$ alkyl), $O(C_{1-4}$ alkenyl), $S(C_{1-4}$ acyl), $S(C_{1-4}$ alkyl), $S(C_{1-4}$ alkynyl), $S(C_{1-4}$ alkenyl), $SO(C_{1-4}$ acyl), $SO(C_{1-4}$ alkyl), $SO(C_{1-4}$ alkynyl), $SO(C_{1-4}$ alkenyl), $SO_2(C_{1-4}$ acyl), $SO_2(C_{1-4}$ alkyl), $SO_2(C_{1-4}$ alkynyl), $SO_2(C_{1-4}$ alkenyl), $O_3S(C_{1-4}$ acyl), $O_3S(C_{1-4}$ alkyl), $O_3S(C_{1-4}$ alkenyl), NH_2, $NH(C_{1-4}$ alkyl), $NH(C_{1-4}$ alkenyl), $NH(C_{1-4}$ alkynyl), $NH(C_{1-4}$ acyl), $N(C_{1-4}$ alkyl)$_2$, $N(C_{1-18}$ acyl)$_2$, wherein alkyl, alkynyl, alkenyl and vinyl are optinally substituted by N_3, CN, one to three halogen (Cl, Br, F, I), NO_2, $C(O)O(C_{1-4}$ alkyl), $C(O)O(C_{1-4}$ alkyl), $C(O)O(C_{1-4}$ alkynyl), $C(O)O(C_{1-4}$ alkenyl), $O(C_{1-4}$ acyl), $O(C_{1-4}$ alkyl), $O(C_{1-4}$ alkenyl), $S(C_{1-4}$ acyl), $S(C_{1-4}$ alkyl), $S(C_{1-4}$ alkynyl), $S(C_{1-4}$ alkenyl), $SO(C_{1-4}$ acyl), $SO(C_{1-4}$ alkyl), $SO(C_{1-4}$ alkynyl), $SO(C_{1-4}$ alkenyl), $SO_2(C_{1-4}$ acyl),

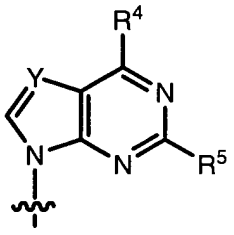
$SO_2(C_{1-4}$ alkyl), $SO_2(C_{1-4}$ alkynyl), $SO_2(C_{1-4}$ alkenyl), $O_3S(C_{1-4}$ acyl), $O_3S(C_{1-4}$ alkyl), $O_3S(C_{1-4}$ alkenyl), NH_2, $NH(C_{1-4}$ alkyl), $NH(C_{1-4}$ alkenyl), $NH(C_{1-4}$ alkynyl), $NH(C_{1-4}$ acyl), $N(C_{1-4}$ alkyl)$_2$, $N(C_{1-4}$ acyl)$_2$, OR^7; R^2 and $R^{2'}$ can be linked together to form a vinyl optionally substituted by one or two of N_3, CN, Cl, Br, F, I, NO_2;

R^6 is an optionally substituted alkyl (including lower alkyl), cyano (CN), CH_3, OCH_3, OCH_2CH_3, hydroxy methyl (CH_2OH), fluoromethyl (CH_2F), azido (N_3), CHCN, CH_2N_3, CH_2NH_2, CH_2NHCH_3, $CH_2N(CH_3)_2$, alkyne (optionally substituted), or fluoro;

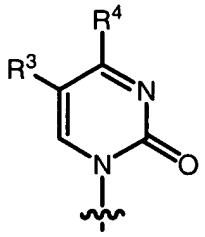
or its pharmaceutically acceptable salt or prodrug thereof, optionally in a pharmaceutically acceptable carrier.

77. The method of claim 76,

wherein Base is selected from the group consisting of:



(a)



(b)

Y is N or CH.

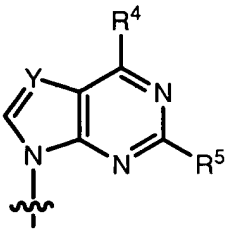
R^3, R^4 and R^5 are independently H, halogen including F, Cl, Br, I, OH, OR', SH, SR', NH_2, NHR', NR'$_2$, lower alkyl of C_1-C_6, halogenated (F, Cl, Br, I) lower alkyl of C_1-C_6 such as CF_3 and CH_2CH_2F, lower alkenyl of C_2-C_6 such as $CH=CH_2$, halogenated (F, Cl, Br, I) lower alkenyl of C_2-C_6 such as CH=CHCl, CH=CHBr and CH=CHI, lower alkynyl of C_2-C_6 such as C≡CH, halogenated (F, Cl, Br, I) lower alkynyl of C_2-C_6,

lower alkoxy of C_1-C_6 such as CH_2OH and CH_2CH_2OH, halogenated (F, Cl, Br, I) lower alkoxy of C_1-C_6, CO_2H, CO_2R', $CONH_2$, CONHR', $CONR'_2$, $CH=CHCO_2H$, $CH=CHCO_2R'$; and,

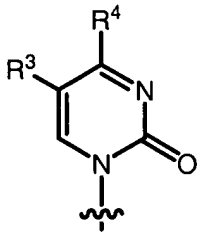
R' is an optionally substituted alkyl of C_1-C_{12} (particularly when the alkyl is an amino acid residue), cycloalkyl, optionally substituted alkynyl of C_2-C_6, optionally substituted lower alkenyl of C_2-C_6, or optionally substituted acyl.

78. The method of claim 76, wherein

Base is selected from the group consisting of (a) or (b):



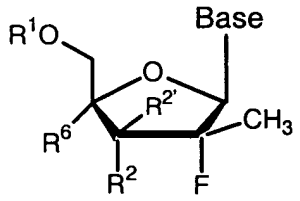
(a)



(b)

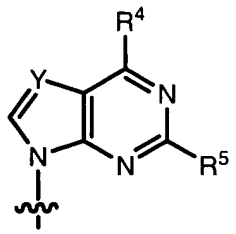
and wherein R^1 is H, R^2 is OH, $R^{2'}$ is H, R^3 is H, and R^4 is NH_2 or OH, and R^5 is NH_2.

79. A method for the treatment or prophylaxis of a West Nile virus infection comprising administering to a host an antivirally effective amount of a (2'*R*)-2'-deoxy-2'-fluoro-2'-*C*-methyl nucleoside (β-D) of the formula:

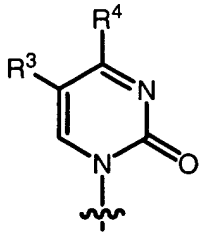


wherein

Base is selected from the group consisting of



(a)



(b)

Y is N or CH;

R^1 and R^7 are independently H, phosphate, including monophosphate, diphosphate, triphosphate, or a stabilized phosphate prodrug, H-phosphonate, including stabilized H-phosphonates, acyl, including optionally substituted phenyl and lower acyl, alkyl, including lower alkyl, O-substituted carboxyalkylamino or its peptide derivatives, sulfonate ester, including alkyl or arylalkyl sulfonyl, including methanesulfonyl and benzyl, wherein the phenyl group is optionally substituted, a lipid, including a phospholipid, an L or D-amino acid (or racemic mixture), a carbohydrate, a peptide, a cholesterol, or other pharmaceutically acceptable leaving group which when administered *in vivo* is capable of providing a compound wherein R^1 is H or phosphate; R^2 is H or phosphate; R^1 and R^2 or R^7 can also be linked with cyclic phosphate group;

R^2 and $R^{2'}$ are independently H, C_{1-4} alkyl, C_{1-4} alkenyl, C_{1-4} alkynyl, vinyl, N_3, CN, Cl, Br, F, I, NO_2, $C(O)O(C_{1-4}$ alkyl), $C(O)O(C_{1-4}$ alkyl), $C(O)O(C_{1-4}$ alkynyl), $C(O)O(C_{1-4}$ alkenyl), $O(C_{1-4}$ acyl), $O(C_{1-4}$ alkyl), $O(C_{1-4}$ alkenyl), $S(C_{1-4}$ acyl), $S(C_{1-4}$ alkyl), $S(C_{1-4}$ alkynyl), $S(C_{1-4}$ alkenyl), $SO(C_{1-4}$ acyl), $SO(C_{1-4}$ alkyl), $SO(C_{1-4}$ alkynyl), $SO(C_{1-4}$ alkenyl), $SO_2(C_{1-4}$ acyl), $SO_2(C_{1-4}$ alkyl), $SO_2(C_{1-4}$ alkynyl), $SO_2(C_{1-4}$ alkenyl), $O_3S(C_{1-4}$ acyl), $O_3S(C_{1-4}$ alkyl), $O_3S(C_{1-4}$ alkenyl), NH_2, $NH(C_{1-4}$

alkyl), NH(C_{1-4} alkenyl), NH(C_{1-4} alkynyl), NH(C_{1-4} acyl), N(C_{1-4} alkyl)$_2$, N(C_{1-18} acyl)$_2$, wherein alkyl, alkynyl, alkenyl and vinyl are optinally substituted by N_3, CN, one to three halogen (Cl, Br, F, I), NO_2, C(O)O(C_{1-4} alkyl), C(O)O(C_{1-4} alkyl), C(O)O(C_{1-4} alkynyl), C(O)O(C_{1-4} alkenyl), O(C_{1-4} acyl), O(C_{1-4} alkyl), O(C_{1-4} alkenyl), S(C_{1-4} acyl), S(C_{1-4} alkyl), S(C_{1-4} alkynyl), S(C_{1-4} alkenyl), SO(C_{1-4} acyl), SO(C_{1-4} alkyl), SO(C_{1-4} alkynyl), SO(C_{1-4} alkenyl), SO_2(C_{1-4} acyl), SO_2(C_{1-4} alkyl), SO_2(C_{1-4} alkynyl), SO_2(C_{1-4} alkenyl), O_3S(C_{1-4} acyl), O_3S(C_{1-4} alkyl), O_3S(C_{1-4} alkenyl), NH_2, NH(C_{1-4} alkyl), NH(C_{1-4} alkenyl), NH(C_{1-4} alkynyl), NH(C_{1-4} acyl), N(C_{1-4} alkyl)$_2$, N(C_{1-4} acyl)$_2$, OR^7; R^2 and $R^{2'}$ can be linked together to form a vinyl optionally substituted by one or two of N_3, CN, Cl, Br, F, I, NO_2;

R^3, R^4 and R^5 are independently H, halogen including F, Cl, Br, I, OH, OR', SH, SR', NH_2, NHR', NR'$_2$, lower alkyl of C_1-C_6, halogenated (F, Cl, Br, I) lower alkyl of C_1-C_6 such as CF_3 and CH_2CH_2F, lower alkenyl of C_2-C_6 such as $CH=CH_2$, halogenated (F, Cl, Br, I) lower alkenyl of C_2-C_6 such as CH=CHCl, CH=CHBr and CH=CHI, lower alkynyl of C_2-C_6 such as C≡CH, halogenated (F, Cl, Br, I) lower alkynyl of C_2-C_6, lower alkoxy of C_1-C_6 such as CH_2OH and CH_2CH_2OH, halogenated (F, Cl, Br, I) lower alkoxy of C_1-C_6, CO_2H, CO_2R', $CONH_2$, CONHR', CONR'$_2$, $CH=CHCO_2H$, $CH=CHCO_2R'$;

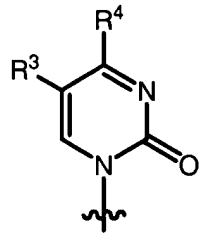
R' is an optionally substituted alkyl of C_1-C_{12} (particularly when the alkyl is an amino acid residue), cycloalkyl, optionally substituted alkynyl of C_2-C_6, optionally substituted lower alkenyl of C_2-C_6, or optionally substituted acyl;

R^6 is an optionally substituted alkyl (including lower alkyl), cyano (CN), CH_3, OCH_3, OCH_2CH_3, hydroxy methyl (CH_2OH), fluoromethyl (CH_2F), azido (N_3), CHCN, CH_2N_3, CH_2NH_2, CH_2NHCH_3, $CH_2N(CH_3)_2$, alkyne (optionally substituted), or fluoro;

or its pharmaceutically acceptable salt or prodrug thereof, optionally in a pharmaceutically acceptable carrier.

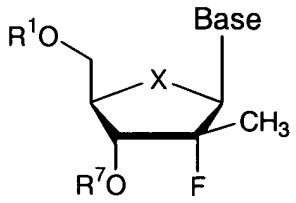
80. The method of claim 79, wherein

Base is



and R^1 is H, R^2 is OH, $R^{2'}$ is H, R^3 is H, R^4 is NH_2 or OH, and R^6 is H.

81. A method for the treatment or prophylaxis of a West Nile virus infection comprising administering to a host an antivirally effective amount of a (2'*R*)-2'-deoxy-2'-fluoro-2'-*C*-methyl nucleoside (β-D or β-L) or its pharmaceutically acceptable salt or prodrug thereof of the structure:



wherein Base is a purine or pyrimidine base;

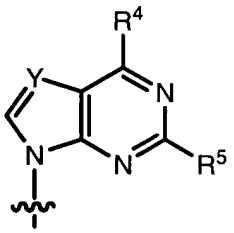
X is O, S, CH_2, Se, NH, N-alkyl, CHW (*R*, *S*, or racemic), $C(W)_2$, wherein W is F, Cl, Br, or I; and,

R^1 and R^7 are independently H, phosphate, including monophosphate, diphosphate, triphosphate, or a stabilized phosphate prodrug, H-

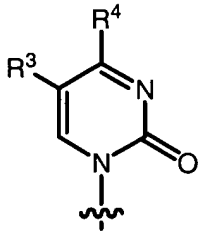
phosphonate, including stabilized H-phosphonates, acyl, including optionally substituted phenyl and lower acyl, alkyl, including lower alkyl, O-substituted carboxyalkylamino or its peptide derivatives, sulfonate ester, including alkyl or arylalkyl sulfonyl, including methanesulfonyl and benzyl, wherein the phenyl group is optionally substituted, a lipid, including a phospholipid, an L or D-amino acid, a carbohydrate, a peptide, a cholesterol, or other pharmaceutically acceptable leaving group which when administered *in vivo* is capable of providing a compound wherein R^1 or R^7 is independently H or phosphate; R^1 and R^7 can also be linked with cyclic phosphate group, and optionally a pharmaceutically acceptable carrier.

82. The method of claim 81, wherein

Base is selected from the group consisting of:



(a)



(b)

Y is N or CH;

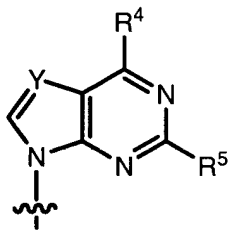
R^3, R^4 and R^5 are independently H, halogen including F, Cl, Br, I, OH, OR', SH, SR', NH_2, NHR', NR'$_2$, lower alkyl of C_1-C_6, halogenated (F, Cl, Br, I) lower alkyl of C_1-C_6 such as CF_3 and CH_2CH_2F, lower alkenyl of C_2-C_6 such as $CH=CH_2$, halogenated (F, Cl, Br, I) lower alkenyl of C_2-C_6 such as CH=CHCl, CH=CHBr and CH=CHI, lower alkynyl of C_2-C_6 such as C≡CH, halogenated (F, Cl, Br, I) lower alkynyl of C_2-C_6, lower alkoxy of C_1-C_6 such as CH_2OH and CH_2CH_2OH, halogenated

(F, Cl, Br, I) lower alkoxy of C_1-C_6, CO_2H, CO_2R', $CONH_2$, CONHR', $CONR'_2$, $CH=CHCO_2H$, $CH=CHCO_2R'$; and,

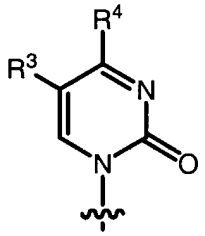
R' is an optionally substituted alkyl of C_1-C_{12} (particularly when the alkyl is an amino acid residue), cycloalkyl, optionally substituted alkynyl of C_2-C_6, optionally substituted lower alkenyl of C_2-C_6, or optionally substituted acyl.

83. The method of claim 81, wherein

Base is selected from the group consisting of (a) or (b):



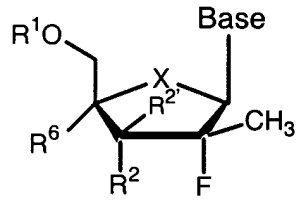
(a)



(b)

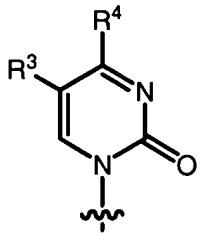
and wherein R^1 and R^7 are H, R^3 is H, and R^4 is NH_2 or OH, and R^5 is NH_2.

84. A method for the treatment or prophylaxis of a West Nile virus infection comprising administering to a host an antivirally effective amount of a (2'*R*)-2'-deoxy-2'-fluoro-2'-*C*-methyl nucleoside (β-D or β-L) of the formula:



wherein

Base is



X is O, S, CH_2, Se, NH, N-alkyl, CHW (*R*, *S*, or racemic), $C(W)_2$, wherein W is F, Cl, Br, or I;

R^1 and R^7 are independently H, phosphate, including monophosphate, diphosphate, triphosphate, or a stabilized phosphate prodrug, H-phosphonate, including stabilized H-phosphonates, acyl, including optionally substituted phenyl and lower acyl, alkyl, including lower alkyl, O-substituted carboxyalkylamino or its peptide derivatives, sulfonate ester, including alkyl or arylalkyl sulfonyl, including methanesulfonyl and benzyl, wherein the phenyl group is optionally substituted, a lipid, including a phospholipid, an L or D-amino acid (or racemic mixture), a carbohydrate, a peptide, a cholesterol, or other pharmaceutically acceptable leaving group which when administered *in vivo* is capable of providing a compound wherein R^1 is H or phosphate; R^2 is H or phosphate; R^1 and R^2 or R^7 can also be linked with cyclic phosphate group;

R^2 and $R^{2'}$ are independently H, $C_{1\text{-}4}$ alkyl, $C_{1\text{-}4}$ alkenyl, $C_{1\text{-}4}$ alkynyl, vinyl, N_3, CN, Cl, Br, F, I, NO_2, $C(O)O(C_{1\text{-}4}$ alkyl), $C(O)O(C_{1\text{-}4}$ alkyl), $C(O)O(C_{1\text{-}4}$ alkynyl), $C(O)O(C_{1\text{-}4}$ alkenyl), $O(C_{1\text{-}4}$ acyl), $O(C_{1\text{-}4}$ alkyl), $O(C_{1\text{-}4}$ alkenyl), $S(C_{1\text{-}4}$ acyl), $S(C_{1\text{-}4}$ alkyl), $S(C_{1\text{-}4}$ alkynyl), $S(C_{1\text{-}4}$ alkenyl), $SO(C_{1\text{-}4}$ acyl), $SO(C_{1\text{-}4}$ alkyl), $SO(C_{1\text{-}4}$ alkynyl), $SO(C_{1\text{-}4}$ alkenyl), $SO_2(C_{1\text{-}4}$ acyl), $SO_2(C_{1\text{-}4}$ alkyl), $SO_2(C_{1\text{-}4}$ alkynyl), $SO_2(C_{1\text{-}4}$ alkenyl), $O_3S(C_{1\text{-}4}$ acyl), $O_3S(C_{1\text{-}4}$ alkyl), $O_3S(C_{1\text{-}4}$ alkenyl), NH_2, $NH(C_{1\text{-}4}$ alkyl), $NH(C_{1\text{-}4}$ alkenyl), $NH(C_{1\text{-}4}$ alkynyl), $NH(C_{1\text{-}4}$ acyl), $N(C_{1\text{-}4}$ alkyl)$_2$, $N(C_{1\text{-}18}$ acyl)$_2$, wherein alkyl, alkynyl, alkenyl and vinyl are optinally substituted by N_3, CN, one to three halogen (Cl, Br, F, I),

NO_2, C(O)O(C_{1-4} alkyl), C(O)O(C_{1-4} alkyl), C(O)O(C_{1-4} alkynyl), C(O)O(C_{1-4} alkenyl), O(C_{1-4} acyl), O(C_{1-4} alkyl), O(C_{1-4} alkenyl), S(C_{1-4} acyl), S(C_{1-4} alkyl), S(C_{1-4} alkynyl), S(C_{1-4} alkenyl), SO(C_{1-4} acyl), SO(C_{1-4} alkyl), SO(C_{1-4} alkynyl), SO(C_{1-4} alkenyl), SO_2(C_{1-4} acyl), SO_2(C_{1-4} alkyl), SO_2(C_{1-4} alkynyl), SO_2(C_{1-4} alkenyl), O_3S(C_{1-4} acyl), O_3S(C_{1-4} alkyl), O_3S(C_{1-4} alkenyl), NH_2, NH(C_{1-4} alkyl), NH(C_{1-4} alkenyl), NH(C_{1-4} alkynyl), NH(C_{1-4} acyl), N(C_{1-4} alkyl)$_2$, N(C_{1-4} acyl)$_2$, OR^7; R^2 and $R^{2'}$ can be linked together to form a vinyl optionally substituted by one or two of N_3, CN, Cl, Br, F, I, NO_2;

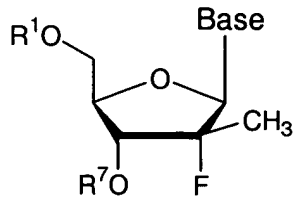
R^3 and R^4 are independently H, halogen including F, Cl, Br, I, OH, OR', SH, SR', NH_2, NHR', NR'$_2$, lower alkyl of C_1-C_6, halogenated (F, Cl, Br, I) lower alkyl of C_1-C_6 such as CF_3 and CH_2CH_2F, lower alkenyl of C_2-C_6 such as $CH=CH_2$, halogenated (F, Cl, Br, I) lower alkenyl of C_2-C_6 such as CH=CHCl, CH=CHBr and CH=CHI, lower alkynyl of C_2-C_6 such as C≡CH, halogenated (F, Cl, Br, I) lower alkynyl of C_2-C_6, lower alkoxy of C_1-C_6 such as CH_2OH and CH_2CH_2OH, halogenated (F, Cl, Br, I) lower alkoxy of C_1-C_6, CO_2H, CO_2R', $CONH_2$, CONHR', CONR'$_2$, $CH=CHCO_2H$, $CH=CHCO_2R'$; and,

R' is an optionally substituted alkyl of C_1-C_{12} (particularly when the alkyl is an amino acid residue), cycloalkyl, optionally substituted alkynyl of C_2-C_6, optionally substituted lower alkenyl of C_2-C_6, or optionally substituted acyl.

R^6 is an optionally substituted alkyl (including lower alkyl), cyano (CN), CH_3, OCH_3, OCH_2CH_3, hydroxy methyl (CH_2OH), fluoromethyl (CH_2F), azido (N_3), CHCN, CH_2N_3, CH_2NH_2, CH_2NHCH_3, $CH_2N(CH_3)_2$, alkyne (optionally substituted), or fluoro;

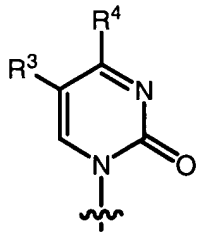
or its pharmaceutically acceptable salt or prodrug thereof, optionally in a pharmaceutically acceptable carrier.

85. A method for the treatment or prophylaxis of a West Nile virus infection comprising administering to a host an antivirally effective amount of a (2'*R*)-2'-deoxy-2'-fluoro-2'-*C*-methyl nucleoside (β-D or β-L) of the formula:



wherein

Base is



R^1 and R^7 are independently H, phosphate, including monophosphate, diphosphate, triphosphate, or a stabilized phosphate prodrug, H-phosphonate, including stabilized H-phosphonates, acyl, including optionally substituted phenyl and lower acyl, alkyl, including lower alkyl, O-substituted carboxyalkylamino or its peptide derivatives, sulfonate ester, including alkyl or arylalkyl sulfonyl, including methanesulfonyl and benzyl, wherein the phenyl group is optionally substituted, a lipid, including a phospholipid, an L or D-amino acid, a carbohydrate, a peptide, a cholesterol, or other pharmaceutically acceptable leaving group which when administered *in vivo* is capable of providing a compound wherein R^1 or R^7 is independently H or phosphate; R^1 and R^7 can also be linked with cyclic phosphate group;

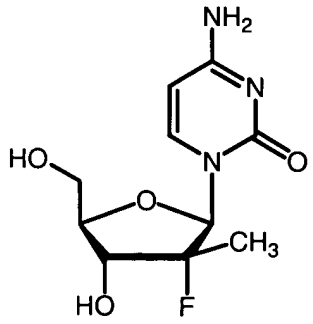
R^3 and R^4 are independently H, halogen including F, Cl, Br, I, OH, OR', SH, SR', NH_2, NHR', NR'$_2$, lower alkyl of C_1-C_6, halogenated (F, Cl, Br, I)

lower alkyl of C_1-C_6 such as CF_3 and CH_2CH_2F, lower alkenyl of C_2-C_6 such as $CH=CH_2$, halogenated (F, Cl, Br, I) lower alkenyl of C_2-C_6 such as CH=CHCl, CH=CHBr and CH=CHI, lower alkynyl of C_2-C_6 such as C≡CH, halogenated (F, Cl, Br, I) lower alkynyl of C_2-C_6, lower alkoxy of C_1-C_6 such as CH_2OH and CH_2CH_2OH, halogenated (F, Cl, Br, I) lower alkoxy of C_1-C_6, CO_2H, CO_2R', $CONH_2$, $CONHR'$, $CONR'_2$, $CH=CHCO_2H$, $CH=CHCO_2R'$;

R' is an optionally substituted alkyl of C_1-C_{12} (particularly when the alkyl is an amino acid residue), cycloalkyl, optionally substituted alkynyl of C_2-C_6, optionally substituted lower alkenyl of C_2-C_6, or optionally substituted acyl.

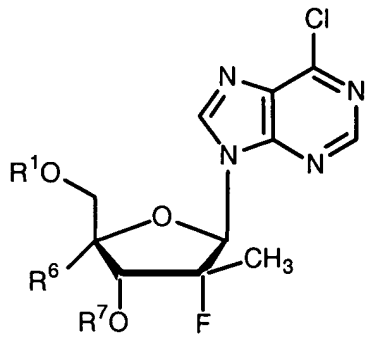
or its pharmaceutically acceptable salt or prodrug thereof, optionally in a pharmaceutically acceptable carrier.

86. A method for the treatment or prophylaxis of a West Nile virus infection comprising administering to a host an antivirally effective amount of a (2'*R*)-2'-deoxy-2'-fluoro-2'-*C*-methyl nucleoside (β-D) or its pharmaceutically acceptable salt or prodrug thereof of the formula:



optionally in a pharmaceutically acceptable carrier.

87. A method for the treatment or prophylaxis of a West Nile virus infection comprising administering to a host an antivirally effective amount of a (2'*R*)-2'-deoxy-2'-fluoro-2'-*C*-methyl nucleoside (β-D) or its pharmaceutically acceptable salt or prodrug thereof of the formula:



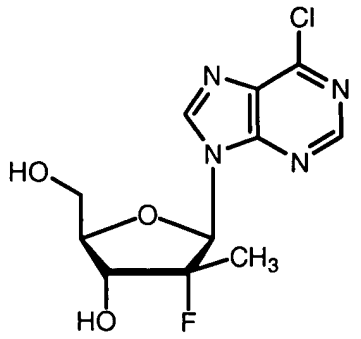
wherein

R^1 and R^7 are independently H, phosphate, including monophosphate, diphosphate, triphosphate, or a stabilized phosphate prodrug, H-phosphonate, including stabilized H-phosphonates, acyl, including optionally substituted phenyl and lower acyl, alkyl, including lower alkyl, O-substituted carboxyalkylamino or its peptide derivatives, sulfonate ester, including alkyl or arylalkyl sulfonyl, including methanesulfonyl and benzyl, wherein the phenyl group is optionally substituted, a lipid, including a phospholipid, an L or D-amino acid, a carbohydrate, a peptide, a cholesterol, or other pharmaceutically acceptable leaving group which when administered *in vivo* is capable of providing a compound wherein R^1 or R^7 is independently H or phosphate; R^1 and R^7 can also be linked with cyclic phosphate group; and,

R^6 is an optionally substituted alkyl (including lower alkyl), cyano (CN), CH_3, OCH_3, OCH_2CH_3, hydroxy methyl (CH_2OH), fluoromethyl (CH_2F), azido (N_3), CHCN, CH_2N_3, CH_2NH_2, CH_2NHCH_3, $CH_2N(CH3)_2$, alkyne (optionally substituted), or fluoro and,

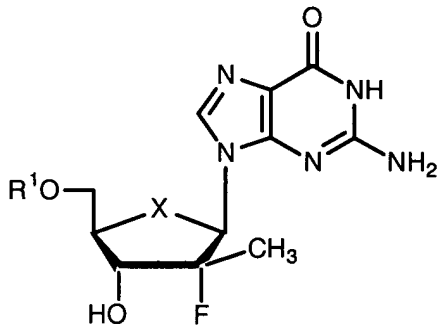
optionally in a pharmaceutically acceptable carrier.

88. A method for the treatment or prophylaxis of a West Nile virus infection comprising administering to a host an antivirally effective amount of a (2'*R*)-2'-deoxy-2'-fluoro-2'-*C*-methyl nucleoside (β-D) or its pharmaceutically acceptable salt or prodrug thereof of the formula:



and optionally a pharmaceutically acceptable carrier.

89. A method for the treatment or prophylaxis of a West Nile virus infection comprising administering to a host an antivirally effective amount of a (2'*R*)-2'-deoxy-2'-fluoro-2'-*C*-methyl nucleoside (β-D) or its pharmaceutically acceptable salt or prodrug thereof of the formula:



wherein

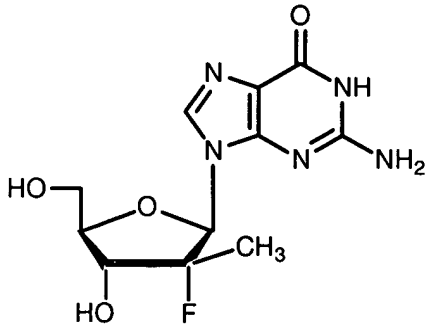
X is O, S, CH_2, Se, NH, N-alkyl, CHW (*R*, *S*, or racemic), $C(W)_2$, wherein W is F, Cl, Br, or I; and

R^1 is H, phosphate, including monophosphate, diphosphate, triphosphate, or a stabilized phosphate prodrug, H-phosphonate, including stabilized H-

phosphonates, acyl, including optionally substituted phenyl and lower acyl, alkyl, including lower alkyl, O-substituted carboxyalkylamino or its peptide derivatives, sulfonate ester, including alkyl or arylalkyl sulfonyl, including methanesulfonyl and benzyl, wherein the phenyl group is optionally substituted, a lipid, including a phospholipid, an L or D-amino acid, a carbohydrate, a peptide, a cholesterol, or other pharmaceutically acceptable leaving group which when administered *in vivo* is capable of providing a compound wherein R^1 is H or phosphate;

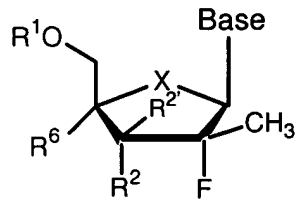
optionally in a pharmaceutically acceptable carrier.

90. A method for the treatment or prophylaxis of a West Nile virus infection comprising administering to a host an antivirally effective amount of a (2'*R*)-2'-deoxy-2'-fluoro-2'-*C*-methyl nucleoside (β-D) or its pharmaceutically acceptable salt or prodrug thereof of the formula:



optionally in a pharmaceutically acceptable carrier.

91. A method for the treatment or prophylaxis of a Dengue virus infection comprising administering to a host an antivirally effective amount of a (2'*R*)-2'-deoxy-2'-fluoro-2'-*C*-methyl nucleoside (β-D or β-L) of the formula:



wherein

Base is a purine or pyrimidine base;

X is O, S, CH_2, Se, NH, N-alkyl, CHW (*R*, *S*, or racemic), $C(W)_2$, wherein W is F, Cl, Br, or I;

R^1 and R^7 are independently H, phosphate, including monophosphate, diphosphate, triphosphate, or a stabilized phosphate prodrug, H-phosphonate, including stabilized H-phosphonates, acyl, including optionally substituted phenyl and lower acyl, alkyl, including lower alkyl, O-substituted carboxyalkylamino or its peptide derivatives, sulfonate ester, including alkyl or arylalkyl sulfonyl, including methanesulfonyl and benzyl, wherein the phenyl group is optionally substituted, a lipid, including a phospholipid, an L or D-amino acid (or racemic mixture), a carbohydrate, a peptide, a cholesterol, or other pharmaceutically acceptable leaving group which when administered *in vivo* is capable of providing a compound wherein R^1 is H or phosphate; R^2 is H or phosphate; R^1 and R^2 or R^7 can also be linked with cyclic phosphate group;

R^2 and $R^{2'}$ are independently H, C_{1-4} alkyl, C_{1-4} alkenyl, C_{1-4} alkynyl, vinyl, N_3, CN, Cl, Br, F, I, NO_2, $C(O)O(C_{1-4}$ alkyl), $C(O)O(C_{1-4}$ alkyl), $C(O)O(C_{1-4}$ alkynyl), $C(O)O(C_{1-4}$ alkenyl), $O(C_{1-4}$ acyl), $O(C_{1-4}$ alkyl), $O(C_{1-4}$ alkenyl), $S(C_{1-4}$ acyl), $S(C_{1-4}$ alkyl), $S(C_{1-4}$ alkynyl), $S(C_{1-4}$ alkenyl), $SO(C_{1-4}$ acyl), $SO(C_{1-4}$ alkyl), $SO(C_{1-4}$ alkynyl), $SO(C_{1-4}$ alkenyl),

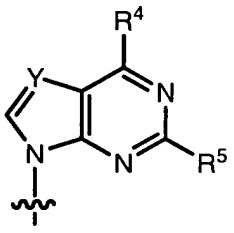
$SO_2(C_{1-4}$ acyl), $SO_2(C_{1-4}$ alkyl), $SO_2(C_{1-4}$ alkynyl), $SO_2(C_{1-4}$ alkenyl), $O_3S(C_{1-4}$ acyl), $O_3S(C_{1-4}$ alkyl), $O_3S(C_{1-4}$ alkenyl), NH_2, $NH(C_{1-4}$ alkyl), $NH(C_{1-4}$ alkenyl), $NH(C_{1-4}$ alkynyl), $NH(C_{1-4}$ acyl), $N(C_{1-4}$ alkyl)$_2$, $N(C_{1-18}$ acyl)$_2$, wherein alkyl, alkynyl, alkenyl and vinyl are optinally substituted by N_3, CN, one to three halogen (Cl, Br, F, I), NO_2, $C(O)O(C_{1-4}$ alkyl), $C(O)O(C_{1-4}$ alkyl), $C(O)O(C_{1-4}$ alkynyl), $C(O)O(C_{1-4}$ alkenyl), $O(C_{1-4}$ acyl), $O(C_{1-4}$ alkyl), $O(C_{1-4}$ alkenyl), $S(C_{1-4}$ acyl), $S(C_{1-4}$ alkyl), $S(C_{1-4}$ alkynyl), $S(C_{1-4}$ alkenyl), $SO(C_{1-4}$ acyl), $SO(C_{1-4}$ alkyl), $SO(C_{1-4}$ alkynyl), $SO(C_{1-4}$ alkenyl), $SO_2(C_{1-4}$ acyl), $SO_2(C_{1-4}$ alkyl), $SO_2(C_{1-4}$ alkynyl), $SO_2(C_{1-4}$ alkenyl), $O_3S(C_{1-4}$ acyl), $O_3S(C_{1-4}$ alkyl), $O_3S(C_{1-4}$ alkenyl), NH_2, $NH(C_{1-4}$ alkyl), $NH(C_{1-4}$ alkenyl), $NH(C_{1-4}$ alkynyl), $NH(C_{1-4}$ acyl), $N(C_{1-4}$ alkyl)$_2$, $N(C_{1-4}$ acyl)$_2$, OR^7; R^2 and $R^{2'}$ can be linked together to form a vinyl optionally substituted by one or two of N_3, CN, Cl, Br, F, I, NO_2;

R^6 is an optionally substituted alkyl (including lower alkyl), cyano (CN), CH_3, OCH_3, OCH_2CH_3, hydroxy methyl (CH_2OH), fluoromethyl (CH_2F), azido (N_3), CHCN, CH_2N_3, CH_2NH_2, CH_2NHCH_3, $CH_2N(CH_3)_2$, alkyne (optionally substituted), or fluoro;

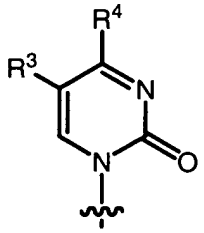
or its pharmaceutically acceptable salt or prodrug thereof, optionally in a pharmaceutically acceptable carrier.

92. The method of claim 91,

wherein Base is selected from the group consisting of:



(a)



(b)

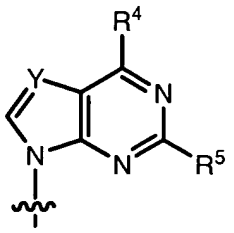
Y is N or CH.

R^3, R^4 and R^5 are independently H, halogen including F, Cl, Br, I, OH, OR', SH, SR', NH_2, NHR', NR'_2, lower alkyl of C_1-C_6, halogenated (F, Cl, Br, I) lower alkyl of C_1-C_6 such as CF_3 and CH_2CH_2F, lower alkenyl of C_2-C_6 such as $CH=CH_2$, halogenated (F, Cl, Br, I) lower alkenyl of C_2-C_6 such as CH=CHCl, CH=CHBr and CH=CHI, lower alkynyl of C_2-C_6 such as C≡CH, halogenated (F, Cl, Br, I) lower alkynyl of C_2-C_6, lower alkoxy of C_1-C_6 such as CH_2OH and CH_2CH_2OH, halogenated (F, Cl, Br, I) lower alkoxy of C_1-C_6, CO_2H, CO_2R', $CONH_2$, CONHR', $CONR'_2$, $CH=CHCO_2H$, $CH=CHCO_2R'$; and,

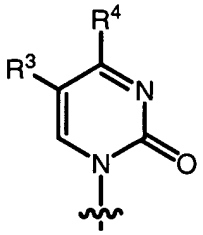
R' is an optionally substituted alkyl of C_1-C_{12} (particularly when the alkyl is an amino acid residue), cycloalkyl, optionally substituted alkynyl of C_2-C_6, optionally substituted lower alkenyl of C_2-C_6, or optionally substituted acyl.

93. The method of claim 91, wherein

Base is selected from the group consisting of (a) or (b):



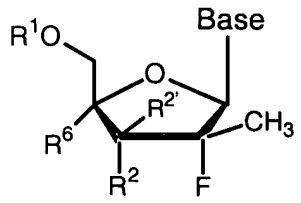
(a)



(b)

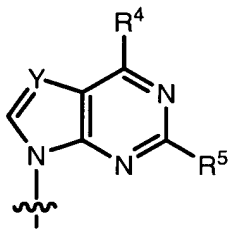
and wherein R^1 is H, R^2 is OH, $R^{2'}$ is H, R^3 is H, and R^4 is NH_2 or OH, and R^5 is NH_2.

94. A method for the treatment or prophylaxis of a Dengue virus infection comprising administering to a host an antivirally effective amount of a (2'*R*)-2'-deoxy-2'-fluoro-2'-*C*-methyl nucleoside (β-D) of the formula:

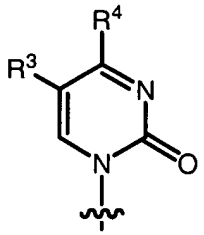


wherein

Base is selected from the group consisting of



(a)



(b)

Y is N or CH;

R^1 and R^7 are independently H, phosphate, including monophosphate, diphosphate, triphosphate, or a stabilized phosphate prodrug, H-phosphonate, including stabilized H-phosphonates, acyl, including optionally substituted phenyl and lower acyl, alkyl, including lower alkyl, O-substituted carboxyalkylamino or its peptide derivatives, sulfonate ester, including alkyl or arylalkyl sulfonyl, including methanesulfonyl and benzyl, wherein the phenyl group is optionally substituted, a lipid, including a phospholipid, an L or D-amino acid (or racemic mixture), a carbohydrate, a peptide, a cholesterol, or other pharmaceutically acceptable leaving group which when administered *in vivo* is capable of providing a compound wherein R^1 is H or phosphate;

R^2 is H or phosphate; R^1 and R^2 or R^7 can also be linked with cyclic phosphate group;

R^2 and $R^{2'}$ are independently H, C_{1-4} alkyl, C_{1-4} alkenyl, C_{1-4} alkynyl, vinyl, N_3, CN, Cl, Br, F, I, NO_2, $C(O)O(C_{1-4}$ alkyl), $C(O)O(C_{1-4}$ alkyl), $C(O)O(C_{1-4}$ alkynyl), $C(O)O(C_{1-4}$ alkenyl), $O(C_{1-4}$ acyl), $O(C_{1-4}$ alkyl), $O(C_{1-4}$ alkenyl), $S(C_{1-4}$ acyl), $S(C_{1-4}$ alkyl), $S(C_{1-4}$ alkynyl), $S(C_{1-4}$ alkenyl), $SO(C_{1-4}$ acyl), $SO(C_{1-4}$ alkyl), $SO(C_{1-4}$ alkynyl), $SO(C_{1-4}$ alkenyl), $SO_2(C_{1-4}$ acyl), $SO_2(C_{1-4}$ alkyl), $SO_2(C_{1-4}$ alkynyl), $SO_2(C_{1-4}$ alkenyl), $O_3S(C_{1-4}$ acyl), $O_3S(C_{1-4}$ alkyl), $O_3S(C_{1-4}$ alkenyl), NH_2, $NH(C_{1-4}$ alkyl), $NH(C_{1-4}$ alkenyl), $NH(C_{1-4}$ alkynyl), $NH(C_{1-4}$ acyl), $N(C_{1-4}$ alkyl)$_2$, $N(C_{1-18}$ acyl)$_2$, wherein alkyl, alkynyl, alkenyl and vinyl are optinally substituted by N_3, CN, one to three halogen (Cl, Br, F, I), NO_2, $C(O)O(C_{1-4}$ alkyl), $C(O)O(C_{1-4}$ alkyl), $C(O)O(C_{1-4}$ alkynyl), $C(O)O(C_{1-4}$ alkenyl), $O(C_{1-4}$ acyl), $O(C_{1-4}$ alkyl), $O(C_{1-4}$ alkenyl), $S(C_{1-4}$ acyl), $S(C_{1-4}$ alkyl), $S(C_{1-4}$ alkynyl), $S(C_{1-4}$ alkenyl), $SO(C_{1-4}$ acyl), $SO(C_{1-4}$ alkyl), $SO(C_{1-4}$ alkynyl), $SO(C_{1-4}$ alkenyl), $SO_2(C_{1-4}$ acyl), $SO_2(C_{1-4}$ alkyl), $SO_2(C_{1-4}$ alkynyl), $SO_2(C_{1-4}$ alkenyl), $O_3S(C_{1-4}$ acyl), $O_3S(C_{1-4}$ alkyl), $O_3S(C_{1-4}$ alkenyl), NH_2, $NH(C_{1-4}$ alkyl), $NH(C_{1-4}$ alkenyl), $NH(C_{1-4}$ alkynyl), $NH(C_{1-4}$ acyl), $N(C_{1-4}$ alkyl)$_2$, $N(C_{1-4}$ acyl)$_2$, OR^7; R^2 and $R^{2'}$ can be linked together to form a vinyl optionally substituted by one or two of N_3, CN, Cl, Br, F, I, NO_2;

R^3, R^4 and R^5 are independently H, halogen including F, Cl, Br, I, OH, OR', SH, SR', NH_2, NHR', NR'$_2$, lower alkyl of C_1-C_6, halogenated (F, Cl, Br, I) lower alkyl of C_1-C_6 such as CF_3 and CH_2CH_2F, lower alkenyl of C_2-C_6 such as $CH=CH_2$, halogenated (F, Cl, Br, I) lower alkenyl of C_2-C_6 such as CH=CHCl, CH=CHBr and CH=CHI, lower alkynyl of C_2-C_6 such as C≡CH, halogenated (F, Cl, Br, I) lower alkynyl of C_2-C_6, lower alkoxy of C_1-C_6 such as CH_2OH and CH_2CH_2OH, halogenated (F, Cl, Br, I) lower alkoxy of C_1-C_6, CO_2H, CO_2R', $CONH_2$, CONHR', CONR'$_2$, $CH=CHCO_2H$, $CH=CHCO_2R'$;

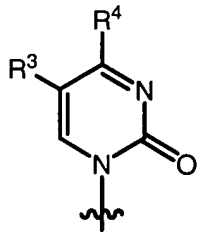
R' is an optionally substituted alkyl of C_1-C_{12} (particularly when the alkyl is an amino acid residue), cycloalkyl, optionally substituted alkynyl of C_2-C_6, optionally substituted lower alkenyl of C_2-C_6, or optionally substituted acyl;

R^6 is an optionally substituted alkyl (including lower alkyl), cyano (CN), CH_3, OCH_3, OCH_2CH_3, hydroxy methyl (CH_2OH), fluoromethyl (CH_2F), azido (N_3), CHCN, CH_2N_3, CH_2NH_2, CH_2NHCH_3, $CH_2N(CH_3)_2$, alkyne (optionally substituted), or fluoro;

or its pharmaceutically acceptable salt or prodrug thereof, optionally in a pharmaceutically acceptable carrier.

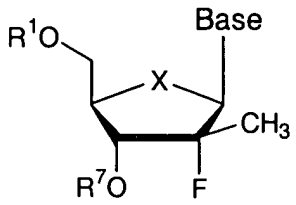
95. The method of claim 94, wherein

Base is



and R^1 is H, R^2 is OH, $R^{2'}$ is H, R^3 is H, R^4 is NH_2 or OH, and R^6 is H.

96. A method for the treatment or prophylaxis of a Dengue virus infection comprising administering to a host an antivirally effective amount of a (2'*R*)-2'-deoxy-2'-fluoro-2'-*C*-methyl nucleoside (β-D or β-L) or its pharmaceutically acceptable salt or prodrug thereof of the structure:



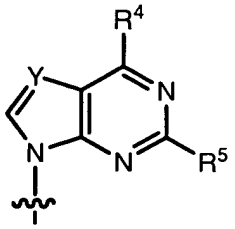
wherein Base is a purine or pyrimidine base;

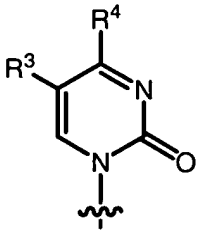
X is O, S, CH_2, Se, NH, N-alkyl, CHW (*R*, *S*, or racemic), $C(W)_2$, wherein W is F, Cl, Br, or I; and,

R^1 and R^7 are independently H, phosphate, including monophosphate, diphosphate, triphosphate, or a stabilized phosphate prodrug, H-phosphonate, including stabilized H-phosphonates, acyl, including optionally substituted phenyl and lower acyl, alkyl, including lower alkyl, O-substituted carboxyalkylamino or its peptide derivatives, sulfonate ester, including alkyl or arylalkyl sulfonyl, including methanesulfonyl and benzyl, wherein the phenyl group is optionally substituted, a lipid, including a phospholipid, an L or D-amino acid, a carbohydrate, a peptide, a cholesterol, or other pharmaceutically acceptable leaving group which when administered *in vivo* is capable of providing a compound wherein R^1 or R^7 is independently H or phosphate; R^1 and R^7 can also be linked with cyclic phosphate group, and optionally a pharmaceutically acceptable carrier.

97. The method of claim 96, wherein

Base is selected from the group consisting of:





(a) (b)

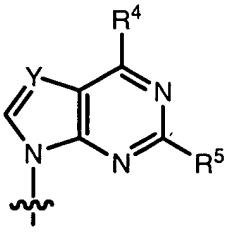
Y is N or CH;

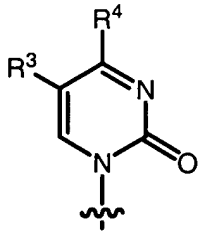
R^3, R^4 and R^5 are independently H, halogen including F, Cl, Br, I, OH, OR', SH, SR', NH_2, NHR', NR'$_2$, lower alkyl of C_1-C_6, halogenated (F, Cl, Br, I) lower alkyl of C_1-C_6 such as CF_3 and CH_2CH_2F, lower alkenyl of C_2-C_6 such as $CH=CH_2$, halogenated (F, Cl, Br, I) lower alkenyl of C_2-C_6 such as CH=CHCl, CH=CHBr and CH=CHI, lower alkynyl of C_2-C_6 such as C≡CH, halogenated (F, Cl, Br, I) lower alkynyl of C_2-C_6, lower alkoxy of C_1-C_6 such as CH_2OH and CH_2CH_2OH, halogenated (F, Cl, Br, I) lower alkoxy of C_1-C_6, CO_2H, CO_2R', $CONH_2$, CONHR', CONR'$_2$, $CH=CHCO_2H$, $CH=CHCO_2R'$; and,

R' is an optionally substituted alkyl of C_1-C_{12} (particularly when the alkyl is an amino acid residue), cycloalkyl, optionally substituted alkynyl of C_2-C_6, optionally substituted lower alkenyl of C_2-C_6, or optionally substituted acyl.

98. The method of claim 96, wherein

Base is selected from the group consisting of (a) or (b):

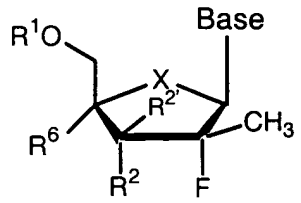




(a) (b)

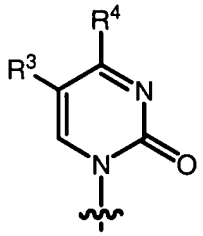
and wherein R^1 and R^7 are H, R^3 is H, and R^4 is NH_2 or OH, and R^5 is NH_2.

99. A method for the treatment or prophylaxis of a Dengue virus infection comprising administering to a host an antivirally effective amount of a (2'*R*)-2'-deoxy-2'-fluoro-2'-*C*-methyl nucleoside (β-D or β-L) of the formula:



wherein

Base is



X is O, S, CH_2, Se, NH, N-alkyl, CHW (*R*, *S*, or racemic), $C(W)_2$, wherein W is F, Cl, Br, or I;

R^1 and R^7 are independently H, phosphate, including monophosphate, diphosphate, triphosphate, or a stabilized phosphate prodrug, H-phosphonate, including stabilized H-phosphonates, acyl, including optionally substituted phenyl and lower acyl, alkyl, including lower alkyl, O-substituted carboxyalkylamino or its peptide derivatives, sulfonate ester, including alkyl or arylalkyl sulfonyl, including methanesulfonyl and benzyl, wherein the phenyl group is optionally substituted, a lipid, including a phospholipid, an L or D-amino acid (or racemic mixture), a carbohydrate, a peptide, a cholesterol, or other pharmaceutically acceptable leaving group which when administered *in vivo* is capable of providing a compound wherein R^1 is H or phosphate; R^2 is H or phosphate; R^1 and R^2 or R^7 can also be linked with cyclic phosphate group;

R^2 and $R^{2'}$ are independently H, C_{1-4} alkyl, C_{1-4} alkenyl, C_{1-4} alkynyl, vinyl, N_3, CN, Cl, Br, F, I, NO_2, $C(O)O(C_{1-4}$ alkyl), $C(O)O(C_{1-4}$ alkyl), $C(O)O(C_{1-4}$ alkynyl), $C(O)O(C_{1-4}$ alkenyl), $O(C_{1-4}$ acyl), $O(C_{1-4}$ alkyl), $O(C_{1-4}$ alkenyl), $S(C_{1-4}$ acyl), $S(C_{1-4}$ alkyl), $S(C_{1-4}$ alkynyl), $S(C_{1-4}$ alkenyl), $SO(C_{1-4}$ acyl), $SO(C_{1-4}$ alkyl), $SO(C_{1-4}$ alkynyl), $SO(C_{1-4}$ alkenyl), $SO_2(C_{1-4}$ acyl), $SO_2(C_{1-4}$ alkyl), $SO_2(C_{1-4}$ alkynyl), $SO_2(C_{1-4}$ alkenyl), $O_3S(C_{1-4}$ acyl), $O_3S(C_{1-4}$ alkyl), $O_3S(C_{1-4}$ alkenyl), NH_2, $NH(C_{1-4}$ alkyl), $NH(C_{1-4}$ alkenyl), $NH(C_{1-4}$ alkynyl), $NH(C_{1-4}$ acyl), $N(C_{1-4}$ alkyl)$_2$, $N(C_{1-18}$ acyl)$_2$, wherein alkyl, alkynyl, alkenyl and vinyl are optinally substituted by N_3, CN, one to three halogen (Cl, Br, F, I), NO_2, $C(O)O(C_{1-4}$ alkyl), $C(O)O(C_{1-4}$ alkyl), $C(O)O(C_{1-4}$ alkynyl), $C(O)O(C_{1-4}$ alkenyl), $O(C_{1-4}$ acyl), $O(C_{1-4}$ alkyl), $O(C_{1-4}$ alkenyl), $S(C_{1-4}$ acyl), $S(C_{1-4}$ alkyl), $S(C_{1-4}$ alkynyl), $S(C_{1-4}$ alkenyl), $SO(C_{1-4}$ acyl), $SO(C_{1-4}$ alkyl), $SO(C_{1-4}$ alkynyl), $SO(C_{1-4}$ alkenyl), $SO_2(C_{1-4}$ acyl), $SO_2(C_{1-4}$ alkyl), $SO_2(C_{1-4}$ alkynyl), $SO_2(C_{1-4}$ alkenyl), $O_3S(C_{1-4}$ acyl), $O_3S(C_{1-4}$ alkyl), $O_3S(C_{1-4}$ alkenyl), NH_2, $NH(C_{1-4}$ alkyl), $NH(C_{1-4}$ alkenyl), $NH(C_{1-4}$ alkynyl), $NH(C_{1-4}$ acyl), $N(C_{1-4}$ alkyl)$_2$, $N(C_{1-4}$ acyl)$_2$, OR^7; R^2 and $R^{2'}$ can be linked together to form a vinyl optionally substituted by one or two of N_3, CN, Cl, Br, F, I, NO_2;

R^3 and R^4 are independently H, halogen including F, Cl, Br, I, OH, OR', SH, SR', NH_2, NHR', NR'$_2$, lower alkyl of C_1-C_6, halogenated (F, Cl, Br, I) lower alkyl of C_1-C_6 such as CF_3 and CH_2CH_2F, lower alkenyl of C_2-C_6 such as $CH=CH_2$, halogenated (F, Cl, Br, I) lower alkenyl of C_2-C_6 such as CH=CHCl, CH=CHBr and CH=CHI, lower alkynyl of C_2-C_6 such as C≡CH, halogenated (F, Cl, Br, I) lower alkynyl of C_2-C_6, lower alkoxy of C_1-C_6 such as CH_2OH and CH_2CH_2OH, halogenated (F, Cl, Br, I) lower alkoxy of C_1-C_6, CO_2H, CO_2R', $CONH_2$, CONHR', CONR'$_2$, $CH=CHCO_2H$, $CH=CHCO_2R'$; and,

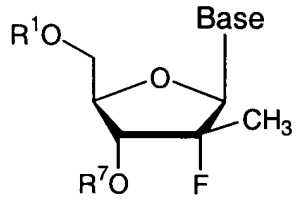
R' is an optionally substituted alkyl of C_1-C_{12} (particularly when the alkyl is an amino acid residue), cycloalkyl, optionally substituted alkynyl of C_2-

C_6, optionally substituted lower alkenyl of C_2-C_6, or optionally substituted acyl.

R^6 is an optionally substituted alkyl (including lower alkyl), cyano (CN), CH_3, OCH_3, OCH_2CH_3, hydroxy methyl (CH_2OH), fluoromethyl (CH_2F), azido (N_3), CHCN, CH_2N_3, CH_2NH_2, CH_2NHCH_3, $CH_2N(CH3)_2$, alkyne (optionally substituted), or fluoro;

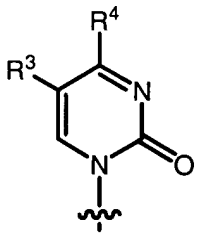
or its pharmaceutically acceptable salt or prodrug thereof, optionally in a pharmaceutically acceptable carrier.

100. A method for the treatment or prophylaxis of a Dengue virus infection comprising administering to a host an antivirally effective amount of a (2'*R*)-2'-deoxy-2'-fluoro-2'-*C*-methyl nucleoside (β-D or β-L) of the formula:



wherein

Base is



R^1 and R^7 are independently H, phosphate, including monophosphate, diphosphate, triphosphate, or a stabilized phosphate prodrug, H-phosphonate, including stabilized H-phosphonates, acyl, including

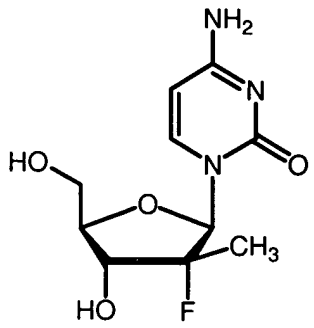
optionally substituted phenyl and lower acyl, alkyl, including lower alkyl, O-substituted carboxyalkylamino or its peptide derivatives, sulfonate ester, including alkyl or arylalkyl sulfonyl, including methanesulfonyl and benzyl, wherein the phenyl group is optionally substituted, a lipid, including a phospholipid, an L or D-amino acid, a carbohydrate, a peptide, a cholesterol, or other pharmaceutically acceptable leaving group which when administered *in vivo* is capable of providing a compound wherein R^1 or R^7 is independently H or phosphate; R^1 and R^7 can also be linked with cyclic phosphate group;

R^3 and R^4 are independently H, halogen including F, Cl, Br, I, OH, OR', SH, SR', NH_2, NHR', NR'$_2$, lower alkyl of C_1-C_6, halogenated (F, Cl, Br, I) lower alkyl of C_1-C_6 such as CF_3 and CH_2CH_2F, lower alkenyl of C_2-C_6 such as $CH=CH_2$, halogenated (F, Cl, Br, I) lower alkenyl of C_2-C_6 such as CH=CHCl, CH=CHBr and CH=CHI, lower alkynyl of C_2-C_6 such as C≡CH, halogenated (F, Cl, Br, I) lower alkynyl of C_2-C_6, lower alkoxy of C_1-C_6 such as CH_2OH and CH_2CH_2OH, halogenated (F, Cl, Br, I) lower alkoxy of C_1-C_6, CO_2H, CO_2R', $CONH_2$, CONHR', CONR'$_2$, $CH=CHCO_2H$, $CH=CHCO_2R'$;

R' is an optionally substituted alkyl of C_1-C_{12} (particularly when the alkyl is an amino acid residue), cycloalkyl, optionally substituted alkynyl of C_2-C_6, optionally substituted lower alkenyl of C_2-C_6, or optionally substituted acyl.

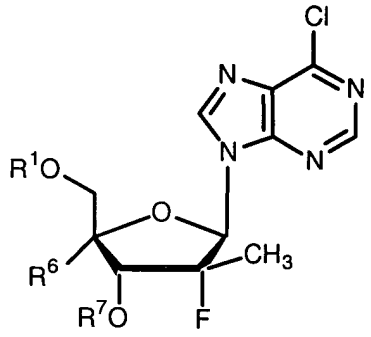
or its pharmaceutically acceptable salt or prodrug thereof, optionally in a pharmaceutically acceptable carrier.

101. A method for the treatment or prophylaxis of a Dengue virus infection comprising administering to a host an antivirally effective amount of a (2'*R*)-2'-deoxy-2'-fluoro-2'-*C*-methyl nucleoside (β-D) or its pharmaceutically acceptable salt or prodrug thereof of the formula:



optionally in a pharmaceutically acceptable carrier.

102. A method for the treatment or prophylaxis of a Dengue virus infection comprising administering to a host an antivirally effective amount of a (2'*R*)-2'-deoxy-2'-fluoro-2'-*C*-methyl nucleoside (β-D) or its pharmaceutically acceptable salt or prodrug thereof of the formula:



wherein

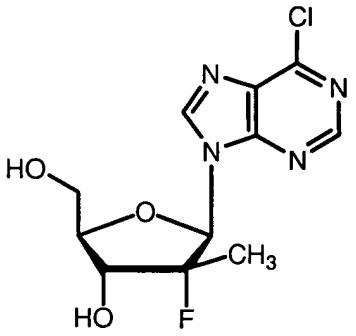
R^1 and R^7 are independently H, phosphate, including monophosphate, diphosphate, triphosphate, or a stabilized phosphate prodrug, H-phosphonate, including stabilized H-phosphonates, acyl, including optionally substituted phenyl and lower acyl, alkyl, including lower alkyl, O-substituted carboxyalkylamino or its peptide derivatives, sulfonate ester, including alkyl or arylalkyl sulfonyl, including methanesulfonyl and benzyl, wherein the phenyl group is optionally substituted, a lipid, including a phospholipid, an L or D-amino acid, a carbohydrate, a peptide, a cholesterol, or other pharmaceutically

acceptable leaving group which when administered *in vivo* is capable of providing a compound wherein R^1 or R^7 is independently H or phosphate; R^1 and R^7 can also be linked with cyclic phosphate group; and,

R^6 is an optionally substituted alkyl (including lower alkyl), cyano (CN), CH_3, OCH_3, OCH_2CH_3, hydroxy methyl (CH_2OH), fluoromethyl (CH_2F), azido (N_3), CHCN, CH_2N_3, CH_2NH_2, CH_2NHCH_3, $CH_2N(CH3)_2$, alkyne (optionally substituted), or fluoro and,

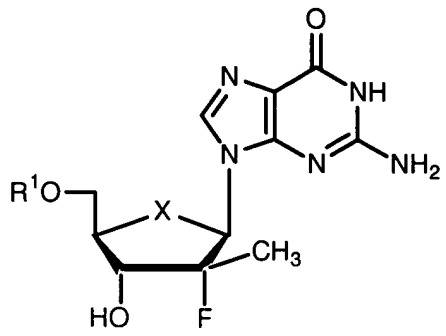
optionally in a pharmaceutically acceptable carrier.

103. A method for the treatment or prophylaxis of a Dengue virus infection comprising administering to a host an antivirally effective amount of a (2'*R*)-2'-deoxy-2'-fluoro-2'-*C*-methyl nucleoside (β-D) or its pharmaceutically acceptable salt or prodrug thereof of the formula:



and optionally a pharmaceutically acceptable carrier.

104. A method for the treatment or prophylaxis of a Dengue virus infection comprising administering to a host an antivirally effective amount of a (2'*R*)-2'-deoxy-2'-fluoro-2'-*C*-methyl nucleoside (β-D) or its pharmaceutically acceptable salt or prodrug thereof of the formula:



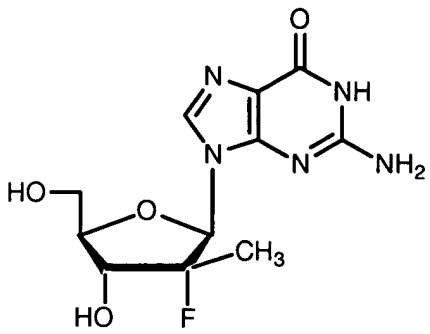
wherein

X is O, S, CH_2, Se, NH, N-alkyl, CHW (*R*, *S*, or racemic), $C(W)_2$, wherein W is F, Cl, Br, or I; and

R^1 is H, phosphate, including monophosphate, diphosphate, triphosphate, or a stabilized phosphate prodrug, H-phosphonate, including stabilized H-phosphonates, acyl, including optionally substituted phenyl and lower acyl, alkyl, including lower alkyl, O-substituted carboxyalkylamino or its peptide derivatives, sulfonate ester, including alkyl or arylalkyl sulfonyl, including methanesulfonyl and benzyl, wherein the phenyl group is optionally substituted, a lipid, including a phospholipid, an L or D-amino acid, a carbohydrate, a peptide, a cholesterol, or other pharmaceutically acceptable leaving group which when administered *in vivo* is capable of providing a compound wherein R^1 is H or phosphate;

optionally in a pharmaceutically acceptable carrier.

105. A method for the treatment or prophylaxis of a Dengue virus infection comprising administering to a host an antivirally effective amount of a (2'*R*)-2'-deoxy-2'-fluoro-2'-*C*-methyl nucleoside (β-D) or its pharmaceutically acceptable salt or prodrug thereof of the formula:



optionally in a pharmaceutically acceptable carrier.

106. The method of 31, wherein the antivirally effective amount of (2'*R*)-2'-deoxy-2'-fluoro-2'-*C*-methyl nucleoside is administered in combination or alternation with at least one treatment selected from the group consisting of: interferon, including interferon alpha 2a, interferon alpha 2b, a pegylated interferon, interferon beta, interferon gamma, interferon tau and interferon omega; an interleukin, including interleukin 10 and interleukin 12; ribavirin; interferon alpha or pegylated interferon alpha in combination with ribavirin or levovirin; levovirin; a protease inhibitor including an NS3 inhibitor, a NS3-4A inhibitor; a helicase inhibitor; a polymerase inhibitor including HCV RNA polymerase and NS5B polymerase inhibitor; gliotoxin; an IRES inhibitor; and antisense oligonucleotide; a thiazolidine derivative; a benzanilide, a ribozyme; another nucleoside, nucleoside prodrug or nucleoside derivative; a 1-amino-alkylcyclohexane; an antioxidant including vitamin E; squalene; amantadine; a bile acid; N-(phosphonoacetyl)-L-aspartic acid; a benzenedicarboxamide; polyadenylic acid; a benzimidazoles; thymosin; a beta tubulin inhibitor; a prophylactic vaccine; an immune modulator, an IMPDH inhibitor; silybin-phosphatidylcholine phytosome; and mycophenolate.

107. The method of 41, wherein the antivirally effective amount of (2'*R*)-2'-deoxy-2'-fluoro-2'-*C*-methyl nucleoside is administered in combination or alternation with at least one treatment selected from the group consisting of: interferon, including interferon alpha 2a, interferon alpha 2b, a pegylated interferon, interferon beta, interferon gamma, interferon tau and interferon omega; an interleukin, including interleukin 10 and interleukin 12; ribavirin;

interferon alpha or pegylated interferon alpha in combination with ribavirin or levovirin; levovirin; a protease inhibitor including an NS3 inhibitor, a NS3-4A inhibitor; a helicase inhibitor; a polymerase inhibitor including HCV RNA polymerase and NS5B polymerase inhibitor; gliotoxin; an IRES inhibitor; and antisense oligonucleotide; a thiazolidine derivative; a benzanilide, a ribozyme; another nucleoside, nucleoside prodrug or nucleoside derivative; a 1-amino-alkylcyclohexane; an antioxidant including vitamin E; squalene; amantadine; a bile acid; N-(phosphonoacetyl)-L-aspartic acid; a benzenedicarboxamide; polyadenylic acid; a benzimidazoles; thymosin; a beta tubulin inhibitor; a prophylactic vaccine; an immune modulator, an IMPDH inhibitor; silybin-phosphatidylcholine phytosome; and mycophenolate.

108. The method of 43, wherein the antivirally effective amount of (2'*R*)-2'-deoxy-2'-fluoro-2'-*C*-methyl nucleoside is administered in combination or alternation with at least one treatment selected from the group consisting of: interferon, including interferon alpha 2a, interferon alpha 2b, a pegylated interferon, interferon beta, interferon gamma, interferon tau and interferon omega; an interleukin, including interleukin 10 and interleukin 12; ribavirin; interferon alpha or pegylated interferon alpha in combination with ribavirin or levovirin; levovirin; a protease inhibitor including an NS3 inhibitor, a NS3-4A inhibitor; a helicase inhibitor; a polymerase inhibitor including HCV RNA polymerase and NS5B polymerase inhibitor; gliotoxin; an IRES inhibitor; and antisense oligonucleotide; a thiazolidine derivative; a benzanilide, a ribozyme; another nucleoside, nucleoside prodrug or nucleoside derivative; a 1-amino-alkylcyclohexane; an antioxidant including vitamin E; squalene; amantadine; a bile acid; N-(phosphonoacetyl)-L-aspartic acid; a benzenedicarboxamide; polyadenylic acid; a benzimidazoles; thymosin; a beta tubulin inhibitor; a prophylactic vaccine; an immune modulator, an IMPDH inhibitor; silybin-phosphatidylcholine phytosome; and mycophenolate.

109. The method of 45, wherein the antivirally effective amount of (2'*R*)-2'-deoxy-2'-fluoro-2'-*C*-methyl nucleoside is administered in combination or alternation with at least one treatment selected from the group consisting of: interferon, including interferon alpha 2a,

interferon alpha 2b, a pegylated interferon, interferon beta, interferon gamma, interferon tau and interferon omega; an interleukin, including interleukin 10 and interleukin 12; ribavirin; interferon alpha or pegylated interferon alpha in combination with ribavirin or levovirin; levovirin; a protease inhibitor including an NS3 inhibitor, a NS3-4A inhibitor; a helicase inhibitor; a polymerase inhibitor including HCV RNA polymerase and NS5B polymerase inhibitor; gliotoxin; an IRES inhibitor; and antisense oligonucleotide; a thiazolidine derivative; a benzanilide, a ribozyme; another nucleoside, nucleoside prodrug or nucleoside derivative; a 1-amino-alkylcyclohexane; an antioxidant including vitamin E; squalene; amantadine; a bile acid; N-(phosphonoacetyl)-L-aspartic acid; a benzenedicarboxamide; polyadenylic acid; a benzimidazoles; thymosin; a beta tubulin inhibitor; a prophylactic vaccine; an immune modulator, an IMPDH inhibitor; silybin-phosphatidylcholine phytosome; and mycophenolate.

110. The method of 46, wherein the antivirally effective amount of (2'*R*)-2'-deoxy-2'-fluoro-2'-*C*-methyl nucleoside is administered in combination or alternation with at least one treatment selected from the group consisting of: interferon, including interferon alpha 2a, interferon alpha 2b, a pegylated interferon, interferon beta, interferon gamma, interferon tau and interferon omega; an interleukin, including interleukin 10 and interleukin 12; ribavirin; interferon alpha or pegylated interferon alpha in combination with ribavirin or levovirin; levovirin; a protease inhibitor including an NS3 inhibitor, a NS3-4A inhibitor; a helicase inhibitor; a polymerase inhibitor including HCV RNA polymerase and NS5B polymerase inhibitor; gliotoxin; an IRES inhibitor; and antisense oligonucleotide; a thiazolidine derivative; a benzanilide, a ribozyme; another nucleoside, nucleoside prodrug or nucleoside derivative; a 1-amino-alkylcyclohexane; an antioxidant including vitamin E; squalene; amantadine; a bile acid; N-(phosphonoacetyl)-L-aspartic acid; a benzenedicarboxamide; polyadenylic acid; a benzimidazoles; thymosin; a beta tubulin inhibitor; a prophylactic vaccine; an immune modulator, an IMPDH inhibitor; silybin-phosphatidylcholine phytosome; and mycophenolate.

111. The method of 56, wherein the antivirally effective amount of (2'*R*)-2'-deoxy-2'-fluoro-2'-*C*-methyl nucleoside is administered in combination or alternation with at least one treatment selected from the group consisting of: interferon, including interferon alpha 2a, interferon alpha 2b, a pegylated interferon, interferon beta, interferon gamma, interferon tau and interferon omega; an interleukin, including interleukin 10 and interleukin 12; ribavirin; interferon alpha or pegylated interferon alpha in combination with ribavirin or levovirin; levovirin; a protease inhibitor including an NS3 inhibitor, a NS3-4A inhibitor; a helicase inhibitor; a polymerase inhibitor including HCV RNA polymerase and NS5B polymerase inhibitor; gliotoxin; an IRES inhibitor; and antisense oligonucleotide; a thiazolidine derivative; a benzanilide, a ribozyme; another nucleoside, nucleoside prodrug or nucleoside derivative; a 1-amino-alkylcyclohexane; an antioxidant including vitamin E; squalene; amantadine; a bile acid; N-(phosphonoacetyl)-L-aspartic acid; a benzenedicarboxamide; polyadenylic acid; a benzimidazoles; thymosin; a beta tubulin inhibitor; a prophylactic vaccine; an immune modulator, an IMPDH inhibitor; silybin-phosphatidylcholine phytosome; and mycophenolate.

112. The method of 58, wherein the antivirally effective amount of (2'*R*)-2'-deoxy-2'-fluoro-2'-*C*-methyl nucleoside is administered in combination or alternation with at least one treatment selected from the group consisting of: interferon, including interferon alpha 2a, interferon alpha 2b, a pegylated interferon, interferon beta, interferon gamma, interferon tau and interferon omega; an interleukin, including interleukin 10 and interleukin 12; ribavirin; interferon alpha or pegylated interferon alpha in combination with ribavirin or levovirin; levovirin; a protease inhibitor including an NS3 inhibitor, a NS3-4A inhibitor; a helicase inhibitor; a polymerase inhibitor including HCV RNA polymerase and NS5B polymerase inhibitor; gliotoxin; an IRES inhibitor; and antisense oligonucleotide; a thiazolidine derivative; a benzanilide, a ribozyme; another nucleoside, nucleoside prodrug or nucleoside derivative; a 1-amino-alkylcyclohexane; an antioxidant including vitamin E; squalene; amantadine; a bile acid; N-(phosphonoacetyl)-L-aspartic acid; a benzenedicarboxamide; polyadenylic acid; a benzimidazoles; thymosin; a beta tubulin inhibitor; a prophylactic

vaccine; an immune modulator, an IMPDH inhibitor; silybin-phosphatidylcholine phytosome; and mycophenolate.

113. The method of 60, wherein the antivirally effective amount of (2'*R*)-2'-deoxy-2'-fluoro-2'-*C*-methyl nucleoside is administered in combination or alternation with at least one treatment selected from the group consisting of: interferon, including interferon alpha 2a, interferon alpha 2b, a pegylated interferon, interferon beta, interferon gamma, interferon tau and interferon omega; an interleukin, including interleukin 10 and interleukin 12; ribavirin; interferon alpha or pegylated interferon alpha in combination with ribavirin or levovirin; levovirin; a protease inhibitor including an NS3 inhibitor, a NS3-4A inhibitor; a helicase inhibitor; a polymerase inhibitor including HCV RNA polymerase and NS5B polymerase inhibitor; gliotoxin; an IRES inhibitor; and antisense oligonucleotide; a thiazolidine derivative; a benzanilide, a ribozyme; another nucleoside, nucleoside prodrug or nucleoside derivative; a 1-amino-alkylcyclohexane; an antioxidant including vitamin E; squalene; amantadine; a bile acid; N-(phosphonoacetyl)-L-aspartic acid; a benzenedicarboxamide; polyadenylic acid; a benzimidazoles; thymosin; a beta tubulin inhibitor; a prophylactic vaccine; an immune modulator, an IMPDH inhibitor; silybin-phosphatidylcholine phytosome; and mycophenolate.

114. The method of 61, wherein the antivirally effective amount of (2'*R*)-2'-deoxy-2'-fluoro-2'-*C*-methyl nucleoside is administered in combination or alternation with at least one treatment selected from the group consisting of: interferon, including interferon alpha 2a, interferon alpha 2b, a pegylated interferon, interferon beta, interferon gamma, interferon tau and interferon omega; an interleukin, including interleukin 10 and interleukin 12; ribavirin; interferon alpha or pegylated interferon alpha in combination with ribavirin or levovirin; levovirin; a protease inhibitor including an NS3 inhibitor, a NS3-4A inhibitor; a helicase inhibitor; a polymerase inhibitor including HCV RNA polymerase and NS5B polymerase inhibitor; gliotoxin; an IRES inhibitor; and antisense oligonucleotide; a thiazolidine derivative; a benzanilide, a ribozyme; another nucleoside, nucleoside prodrug or nucleoside derivative; a 1-amino-alkylcyclohexane; an antioxidant including vitamin E; squalene;

amantadine; a bile acid; N-(phosphonoacetyl)-L-aspartic acid; a benzenedicarboxamide; polyadenylic acid; a benzimidazoles; thymosin; a beta tubulin inhibitor; a prophylactic vaccine; an immune modulator, an IMPDH inhibitor; silybin-phosphatidylcholine phytosome; and mycophenolate.

115. The method of 71, wherein the antivirally effective amount of (2'*R*)-2'-deoxy-2'-fluoro-2'-*C*-methyl nucleoside is administered in combination or alternation with at least one treatment selected from the group consisting of: interferon, including interferon alpha 2a, interferon alpha 2b, a pegylated interferon, interferon beta, interferon gamma, interferon tau and interferon omega; an interleukin, including interleukin 10 and interleukin 12; ribavirin; interferon alpha or pegylated interferon alpha in combination with ribavirin or levovirin; levovirin; a protease inhibitor including an NS3 inhibitor, a NS3-4A inhibitor; a helicase inhibitor; a polymerase inhibitor including HCV RNA polymerase and NS5B polymerase inhibitor; gliotoxin; an IRES inhibitor; and antisense oligonucleotide; a thiazolidine derivative; a benzanilide, a ribozyme; another nucleoside, nucleoside prodrug or nucleoside derivative; a 1-amino-alkylcyclohexane; an antioxidant including vitamin E; squalene; amantadine; a bile acid; N-(phosphonoacetyl)-L-aspartic acid; a benzenedicarboxamide; polyadenylic acid; a benzimidazoles; thymosin; a beta tubulin inhibitor; a prophylactic vaccine; an immune modulator, an IMPDH inhibitor; silybin-phosphatidylcholine phytosome; and mycophenolate.

116. The method of 73, wherein the antivirally effective amount of (2'*R*)-2'-deoxy-2'-fluoro-2'-*C*-methyl nucleoside is administered in combination or alternation with at least one treatment selected from the group consisting of: interferon, including interferon alpha 2a, interferon alpha 2b, a pegylated interferon, interferon beta, interferon gamma, interferon tau and interferon omega; an interleukin, including interleukin 10 and interleukin 12; ribavirin; interferon alpha or pegylated interferon alpha in combination with ribavirin or levovirin; levovirin; a protease inhibitor including an NS3 inhibitor, a NS3-4A inhibitor; a helicase inhibitor; a polymerase inhibitor including HCV RNA polymerase and NS5B polymerase inhibitor; gliotoxin; an IRES inhibitor; and antisense oligonucleotide; a thiazolidine

derivative; a benzanilide, a ribozyme; another nucleoside, nucleoside prodrug or nucleoside derivative; a 1-amino-alkylcyclohexane; an antioxidant including vitamin E; squalene; amantadine; a bile acid; N-(phosphonoacetyl)-L-aspartic acid; a benzenedicarboxamide; polyadenylic acid; a benzimidazoles; thymosin; a beta tubulin inhibitor; a prophylactic vaccine; an immune modulator, an IMPDH inhibitor; silybin-phosphatidylcholine phytosome; and mycophenolate.

117. The method of 75, wherein the antivirally effective amount of (2'*R*)-2'-deoxy-2'-fluoro-2'-*C*-methyl nucleoside is administered in combination or alternation with at least one treatment selected from the group consisting of: interferon, including interferon alpha 2a, interferon alpha 2b, a pegylated interferon, interferon beta, interferon gamma, interferon tau and interferon omega; an interleukin, including interleukin 10 and interleukin 12; ribavirin; interferon alpha or pegylated interferon alpha in combination with ribavirin or levovirin; levovirin; a protease inhibitor including an NS3 inhibitor, a NS3-4A inhibitor; a helicase inhibitor; a polymerase inhibitor including HCV RNA polymerase and NS5B polymerase inhibitor; gliotoxin; an IRES inhibitor; and antisense oligonucleotide; a thiazolidine derivative; a benzanilide, a ribozyme; another nucleoside, nucleoside prodrug or nucleoside derivative; a 1-amino-alkylcyclohexane; an antioxidant including vitamin E; squalene; amantadine; a bile acid; N-(phosphonoacetyl)-L-aspartic acid; a benzenedicarboxamide; polyadenylic acid; a benzimidazoles; thymosin; a beta tubulin inhibitor; a prophylactic vaccine; an immune modulator, an IMPDH inhibitor; silybin-phosphatidylcholine phytosome; and mycophenolate.

118. The method of 76, wherein the antivirally effective amount of (2'*R*)-2'-deoxy-2'-fluoro-2'-*C*-methyl nucleoside is administered in combination or alternation with at least one treatment selected from the group consisting of: interferon, including interferon alpha 2a, interferon alpha 2b, a pegylated interferon, interferon beta, interferon gamma, interferon tau and interferon omega; an interleukin, including interleukin 10 and interleukin 12; ribavirin; interferon alpha or pegylated interferon alpha in combination with ribavirin or levovirin; levovirin; a protease inhibitor including an NS3 inhibitor, a NS3-4A inhibitor; a helicase

inhibitor; a polymerase inhibitor including HCV RNA polymerase and NS5B polymerase inhibitor; gliotoxin; an IRES inhibitor; and antisense oligonucleotide; a thiazolidine derivative; a benzanilide, a ribozyme; another nucleoside, nucleoside prodrug or nucleoside derivative; a 1-amino-alkylcyclohexane; an antioxidant including vitamin E; squalene; amantadine; a bile acid; N-(phosphonoacetyl)-L-aspartic acid; a benzenedicarboxamide; polyadenylic acid; a benzimidazoles; thymosin; a beta tubulin inhibitor; a prophylactic vaccine; an immune modulator, an IMPDH inhibitor; silybin-phosphatidylcholine phytosome; and mycophenolate.

119. The method of 86, wherein the antivirally effective amount of (2'*R*)-2'-deoxy-2'-fluoro-2'-*C*-methyl nucleoside is administered in combination or alternation with at least one treatment selected from the group consisting of: interferon, including interferon alpha 2a, interferon alpha 2b, a pegylated interferon, interferon beta, interferon gamma, interferon tau and interferon omega; an interleukin, including interleukin 10 and interleukin 12; ribavirin; interferon alpha or pegylated interferon alpha in combination with ribavirin or levovirin; levovirin; a protease inhibitor including an NS3 inhibitor, a NS3-4A inhibitor; a helicase inhibitor; a polymerase inhibitor including HCV RNA polymerase and NS5B polymerase inhibitor; gliotoxin; an IRES inhibitor; and antisense oligonucleotide; a thiazolidine derivative; a benzanilide, a ribozyme; another nucleoside, nucleoside prodrug or nucleoside derivative; a 1-amino-alkylcyclohexane; an antioxidant including vitamin E; squalene; amantadine; a bile acid; N-(phosphonoacetyl)-L-aspartic acid; a benzenedicarboxamide; polyadenylic acid; a benzimidazoles; thymosin; a beta tubulin inhibitor; a prophylactic vaccine; an immune modulator, an IMPDH inhibitor; silybin-phosphatidylcholine phytosome; and mycophenolate.

120. The method of 88, wherein the antivirally effective amount of (2'*R*)-2'-deoxy-2'-fluoro-2'-*C*-methyl nucleoside is administered in combination or alternation with at least one treatment selected from the group consisting of: interferon, including interferon alpha 2a, interferon alpha 2b, a pegylated interferon, interferon beta, interferon gamma, interferon tau and interferon omega; an interleukin, including interleukin 10 and interleukin 12; ribavirin;

interferon alpha or pegylated interferon alpha in combination with ribavirin or levovirin; levovirin; a protease inhibitor including an NS3 inhibitor, a NS3-4A inhibitor; a helicase inhibitor; a polymerase inhibitor including HCV RNA polymerase and NS5B polymerase inhibitor; gliotoxin; an IRES inhibitor; and antisense oligonucleotide; a thiazolidine derivative; a benzanilide, a ribozyme; another nucleoside, nucleoside prodrug or nucleoside derivative; a 1-amino-alkylcyclohexane; an antioxidant including vitamin E; squalene; amantadine; a bile acid; N-(phosphonoacetyl)-L-aspartic acid; a benzenedicarboxamide; polyadenylic acid; a benzimidazoles; thymosin; a beta tubulin inhibitor; a prophylactic vaccine; an immune modulator, an IMPDH inhibitor; silybin-phosphatidylcholine phytosome; and mycophenolate.

121. The method of 90, wherein the antivirally effective amount of (2'*R*)-2'-deoxy-2'-fluoro-2'-*C*-methyl nucleoside is administered in combination or alternation with at least one treatment selected from the group consisting of: interferon, including interferon alpha 2a, interferon alpha 2b, a pegylated interferon, interferon beta, interferon gamma, interferon tau and interferon omega; an interleukin, including interleukin 10 and interleukin 12; ribavirin; interferon alpha or pegylated interferon alpha in combination with ribavirin or levovirin; levovirin; a protease inhibitor including an NS3 inhibitor, a NS3-4A inhibitor; a helicase inhibitor; a polymerase inhibitor including HCV RNA polymerase and NS5B polymerase inhibitor; gliotoxin; an IRES inhibitor; and antisense oligonucleotide; a thiazolidine derivative; a benzanilide, a ribozyme; another nucleoside, nucleoside prodrug or nucleoside derivative; a 1-amino-alkylcyclohexane; an antioxidant including vitamin E; squalene; amantadine; a bile acid; N-(phosphonoacetyl)-L-aspartic acid; a benzenedicarboxamide; polyadenylic acid; a benzimidazoles; thymosin; a beta tubulin inhibitor; a prophylactic vaccine; an immune modulator, an IMPDH inhibitor; silybin-phosphatidylcholine phytosome; and mycophenolate.

122. The method of 91, wherein the antivirally effective amount of (2'*R*)-2'-deoxy-2'-fluoro-2'-*C*-methyl nucleoside is administered in combination or alternation with at least one treatment selected from the group consisting of: interferon, including interferon alpha 2a,

interferon alpha 2b, a pegylated interferon, interferon beta, interferon gamma, interferon tau and interferon omega; an interleukin, including interleukin 10 and interleukin 12; ribavirin; interferon alpha or pegylated interferon alpha in combination with ribavirin or levovirin; levovirin; a protease inhibitor including an NS3 inhibitor, a NS3-4A inhibitor; a helicase inhibitor; a polymerase inhibitor including HCV RNA polymerase and NS5B polymerase inhibitor; gliotoxin; an IRES inhibitor; and antisense oligonucleotide; a thiazolidine derivative; a benzanilide, a ribozyme; another nucleoside, nucleoside prodrug or nucleoside derivative; a 1-amino-alkylcyclohexane; an antioxidant including vitamin E; squalene; amantadine; a bile acid; N-(phosphonoacetyl)-L-aspartic acid; a benzenedicarboxamide; polyadenylic acid; a benzimidazoles; thymosin; a beta tubulin inhibitor; a prophylactic vaccine; an immune modulator, an IMPDH inhibitor; silybin-phosphatidylcholine phytosome; and mycophenolate.

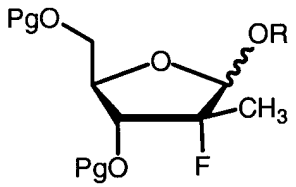
123. The method of 101, wherein the antivirally effective amount of (2'*R*)-2'-deoxy-2'-fluoro-2'-*C*-methyl nucleoside is administered in combination or alternation with at least one treatment selected from the group consisting of: interferon, including interferon alpha 2a, interferon alpha 2b, a pegylated interferon, interferon beta, interferon gamma, interferon tau and interferon omega; an interleukin, including interleukin 10 and interleukin 12; ribavirin; interferon alpha or pegylated interferon alpha in combination with ribavirin or levovirin; levovirin; a protease inhibitor including an NS3 inhibitor, a NS3-4A inhibitor; a helicase inhibitor; a polymerase inhibitor including HCV RNA polymerase and NS5B polymerase inhibitor; gliotoxin; an IRES inhibitor; and antisense oligonucleotide; a thiazolidine derivative; a benzanilide, a ribozyme; another nucleoside, nucleoside prodrug or nucleoside derivative; a 1-amino-alkylcyclohexane; an antioxidant including vitamin E; squalene; amantadine; a bile acid; N-(phosphonoacetyl)-L-aspartic acid; a benzenedicarboxamide; polyadenylic acid; a benzimidazoles; thymosin; a beta tubulin inhibitor; a prophylactic vaccine; an immune modulator, an IMPDH inhibitor; silybin-phosphatidylcholine phytosome; and mycophenolate.

124. The method of 103, wherein the antivirally effective amount of (2'*R*)-2'-deoxy-2'-fluoro-2'-*C*-methyl nucleoside is administered in combination or alternation with at least one treatment selected from the group consisting of: interferon, including interferon alpha 2a, interferon alpha 2b, a pegylated interferon, interferon beta, interferon gamma, interferon tau and interferon omega; an interleukin, including interleukin 10 and interleukin 12; ribavirin; interferon alpha or pegylated interferon alpha in combination with ribavirin or levovirin; levovirin; a protease inhibitor including an NS3 inhibitor, a NS3-4A inhibitor; a helicase inhibitor; a polymerase inhibitor including HCV RNA polymerase and NS5B polymerase inhibitor; gliotoxin; an IRES inhibitor; and antisense oligonucleotide; a thiazolidine derivative; a benzanilide, a ribozyme; another nucleoside, nucleoside prodrug or nucleoside derivative; a 1-amino-alkylcyclohexane; an antioxidant including vitamin E; squalene; amantadine; a bile acid; N-(phosphonoacetyl)-L-aspartic acid; a benzenedicarboxamide; polyadenylic acid; a benzimidazoles; thymosin; a beta tubulin inhibitor; a prophylactic vaccine; an immune modulator, an IMPDH inhibitor; silybin-phosphatidylcholine phytosome; and mycophenolate.

125. The method of 105, wherein the antivirally effective amount of (2'*R*)-2'-deoxy-2'-fluoro-2'-*C*-methyl nucleoside is administered in combination or alternation with at least one treatment selected from the group consisting of: interferon, including interferon alpha 2a, interferon alpha 2b, a pegylated interferon, interferon beta, interferon gamma, interferon tau and interferon omega; an interleukin, including interleukin 10 and interleukin 12; ribavirin; interferon alpha or pegylated interferon alpha in combination with ribavirin or levovirin; levovirin; a protease inhibitor including an NS3 inhibitor, a NS3-4A inhibitor; a helicase inhibitor; a polymerase inhibitor including HCV RNA polymerase and NS5B polymerase inhibitor; gliotoxin; an IRES inhibitor; and antisense oligonucleotide; a thiazolidine derivative; a benzanilide, a ribozyme; another nucleoside, nucleoside prodrug or nucleoside derivative; a 1-amino-alkylcyclohexane; an antioxidant including vitamin E; squalene; amantadine; a bile acid; N-(phosphonoacetyl)-L-aspartic acid; a benzenedicarboxamide; polyadenylic acid; a benzimidazoles; thymosin; a beta tubulin

inhibitor; a prophylactic vaccine; an immune modulator, an IMPDH inhibitor; silybin-phosphatidylcholine phytosome; and mycophenolate.

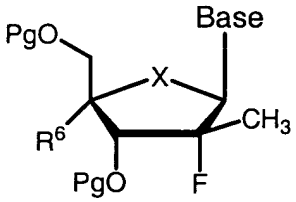
126. A method of synthesizing a (2'*R*)-2'-deoxy-2'-fluoro-2'-*C*-methyl nucleoside (β-D or β-L) comprising glycosylation of a nucleobase with an intermediate structure:



1-4

wherein R is lower alkyl, acyl, benzoyl, or mesyl; and Pg is any acceptable protecting group consisting of but not limited to C(O)-alkyl, C(O)Ph, C(O)aryl, CH_3, CH_2-alkyl, CH_2-alkenyl, CH_2Ph, CH_2-aryl, CH_2O-alkyl, CH_2O-aryl, SO_2-alkyl, SO_2-aryl, *tert*-butyldimethylsilyl, *tert*-butyldiphenylsilyl, or both Pg's may come together to for a 1,3-(1,1,3,3-tetraisopropyldisiloxanylidene).

127. A method of synthesizing a (2'*R*)-2'-deoxy-2'-fluoro-2'-*C*-methyl nucleoside (β-D or β-L) comprising selective deprotection of either Pg in an intermediate of the structure:

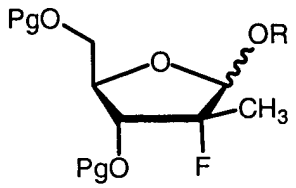


2-5

wherein, X is O, S, CH_2, Se, NH, N-alkyl, CHW (*R*, *S*, or racemic), $C(W)_2$, wherein W is F, Cl, Br, or I; and Pg is independently any pharmaceutically acceptable protecting group

selected from the group consisting of C(O)-alkyl, C(O)Ph, C(O)aryl, CH_3, CH_2-alkyl, CH_2-alkenyl, CH_2Ph, CH_2-aryl, CH_2O-alkyl, CH_2O-aryl, SO_2-alkyl, SO_2-aryl, *tert*-butyldimethylsilyl, *tert*-butyldiphenylsilyl, or both Pg's may come together to for a 1,3-(1,1,3,3-tetraisopropyldisiloxanylidene).

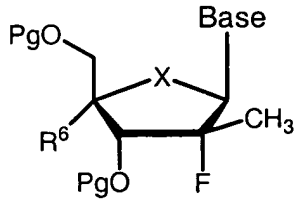
128. An intermediate in the synthesis of a (2'*R*)-2'-deoxy-2'-fluoro-2'-*C*-methyl nucleoside (β-D or β-L), wherein the intermediate is of the structure:



1-4

wherein R is lower alkyl, acyl, benzoyl, or mesyl; and Pg is any acceptable protecting group consisting of but not limited to C(O)-alkyl, C(O)Ph, C(O)aryl, CH_3, CH_2-alkyl, CH_2-alkenyl, CH_2Ph, CH_2-aryl, CH_2O-alkyl, CH_2O-aryl, SO_2-alkyl, SO_2-aryl, *tert*-butyldimethylsilyl, *tert*-butyldiphenylsilyl, or both Pg's may come together to for a 1,3-(1,1,3,3-tetraisopropyldisiloxanylidene).

129. An intermediate in the synthesis of a (2'*R*)-2'-deoxy-2'-fluoro-2'-*C*-methyl nucleoside (β-D or β-L), wherein the intermediate is of the structure:



2-5

wherein, X is O, S, CH_2, Se, NH, N-alkyl, CHW (*R*, *S*, or racemic), $C(W)_2$, wherein W is F, Cl, Br, or I; and Pg is independently any pharmaceutically acceptable protecting group selected from the group consisting of C(O)-alkyl, C(O)Ph, C(O)aryl, CH_3, CH_2-alkyl, CH_2-alkenyl, CH_2Ph, CH_2-aryl, CH_2O-alkyl, CH_2O-aryl, SO_2-alkyl, SO_2-aryl, *tert*-butyldimethylsilyl, *tert*-butyldiphenylsilyl, or both Pg's may come together to for a 1,3-(1,1,3,3-tetraisopropyldisiloxanylidene).